

Tuesday 5 September 2023

Environmental Engineer & Director

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**Re: Surface Water Quality Monitoring Results and Report for the Tweed Valley Hospital Project**

*Reporting period: 16 July 2023 to 14 August 2023*

**1.0 INTRODUCTION**

Ecoteam is engaged to undertake monthly and event-based surface water monitoring on behalf of Lendlease Building as part of the main works for the Tweed Valley Hospital Project. This report presents results from the 50<sup>th</sup> round of monthly sampling. This report satisfies the requirements of the SSD2 conditions. No controlled or uncontrolled releases from the sediment basins occurred during the reporting period.

**2.0 PROJECT AIMS AND SAMPLING OBJECTIVES**

The surface water monitoring objectives for the site are to detect changes during construction in receiving water quality resulting from the project. Stormwater discharges potentially contain increased sediment loads, nutrients, total and dissolved metals, hydrocarbons, or other contaminants such as pesticides. Baseline water quality data was performed on 19 and 26 November and 19 December 2018 to record water quality conditions under the existing land use prior to construction (Lendlease Building, 2019).

**3.0 WEATHER CONDITIONS**

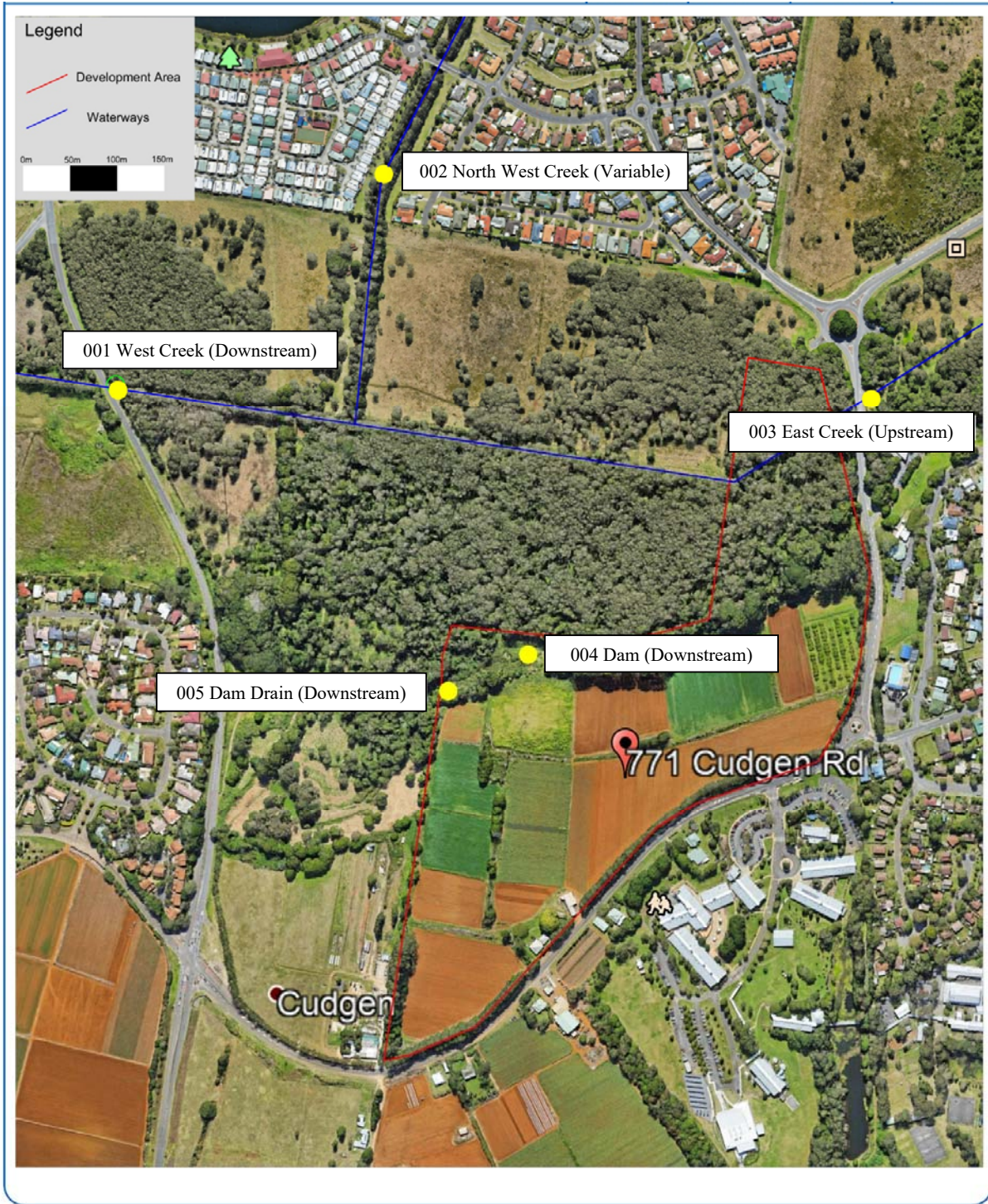
Total rainfall in the period prior to sampling (16 July 2023 to 14 August 2023) was 29.4 mm with the highest 24-hour rainfall occurring on 18 July, being 8.2 mm (Kingscliff BOM Station 058137).

**4.0 SAMPLING LOCATIONS**

Samples were collected from four of the five monthly sampling Sites (001 – 003 and 005). Site 004 has been infilled and has been removed from ongoing sampling rounds. Control samples were also collected and analysed (013 – 015). Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**. Site photos taken on the day of sampling are included in **Appendix A**. During sampling, Site 002 was noted to be flowing North. Therefore, Site 002 will be assessed as a downstream sample site.

**Table 1.** Monthly sampling sites, control samples, sample codes, and applicable WQOs.

| Sample Codes | Sampling Site Name          | Short Name | WQOs       |
|--------------|-----------------------------|------------|------------|
| 001          | West Creek (Downstream)     | WC         | Estuarine  |
| 002          | North West Creek (Variable) | NWC        | Estuarine  |
| 003          | East Creek (Upstream)       | EC         | Freshwater |
| 004          | Dam (Downstream)            | Dam        | Freshwater |
| 005          | Dam Drain (Downstream)      | DD         | Freshwater |
| 013          | Trip Blank                  | Trip       | NA         |
| 014          | Field Blank                 | Field      | NA         |
| 015          | Field Duplicate             | Duplicate  | NA         |



**Figure 1.** Map of monthly sampling sites (Source: Google Earth).

## 5.0 SAMPLING METHODOLOGY

Sampling was undertaken by [REDACTED] on Tuesday 15 August 2023. The weather was sunny. In situ, physico-chemical measurements were collected using a AquaTROLL multi-parameter probe, and Turbidity was measured using a Turbimeter Plus turbidity meter. Oil and grease were visually assessed. The calibration certificate for the AquaTROLL is included in **Appendix B**. The Turbimeter Plus is calibrated before each sampling round. Water quality samples were collected at 300 mm below the surface where possible. Samples were collected from the bank using an extension pole.

Samples were filtered and preserved on-site where necessary, stored on ice, and couriered overnight to the NATA-accredited Envirolab in Sydney. Trip blank samples (013) were sent from Envirolab and transported to all sites, then returned to Envirolab with the field samples. The field blank samples (014) were assessed at Site 001. Duplicate samples (015) were collected at Site 003 and were filtered and preserved as required. Field and trip blanks were filled with deionized water and do not represent water quality from the site. A full list of analytes for the project is included in **Appendix C**.

## 6.0 ASSESSMENT CRITERIA

Water quality results were compared against the Water Quality Objectives (WQO) in the following guidelines:

- *NSW Water Quality Objectives for the Tweed River Catchment for Aquatic Ecosystems* (Tweed 2006) - Trigger criteria for estuaries.
- *Australian and New Zealand guidelines for fresh and marine water quality (ANZECC 2000)* – Trigger values for freshwater (level of protection 95% species).

## 7.0 RESULTS

### 7.1 Physico-chemical Results

In situ, physico-chemical sampling results with comparison to WQOs are shown in **Table 2**. There were no surface sheens visible at any sites, therefore oil and grease were not present.

**Table 2.** Results of physico-chemical parameters. The results above guidelines are highlighted.

|  |                     | Water Quality Objectives (WQOs) |             | Sample Codes and Results |                |             |               |
|--|---------------------|---------------------------------|-------------|--------------------------|----------------|-------------|---------------|
| Analyte                                    | Units               | Estuary                         | Fresh Water | WC 001 (Down)            | NWC 002 (Down) | EC 003 (Up) | DD 005 (Down) |
| <i>pH</i>                                  |                     | 7.0-8.5                         | 6.5-8.5     | 6.97                     | 7.28           | 7.11        | 7.06          |
| <i>Turbidity</i>                           | <i>NTU</i>          | 0.5-10                          | 6.0-50      | 5.14                     | 13.6           | 0.64        | 1.5           |
| <i>Electrical Conductivity (EC)</i>        | <i>µS/cm</i>        | 125-2,200                       | 125-2,200   | 965.73                   | 235.95         | 147.91      | 131.53        |
| <i>Dissolved Oxygen (DO)</i>               | <i>% Saturation</i> | 80-110                          | 85-110      | 31.4                     | 77.75          | 23.89       | 25.7          |
| <i>Temperature</i>                         | <i>°C</i>           | N/A                             | N/A         | 17.19                    | 18.74          | 18.04       | 17.9          |
| <i>Oxidation-Reduction Potential (ORP)</i> | <i>mV</i>           | N/A                             | N/A         | 207.6                    | 256.6          | 226.6       | 207.6         |



When compared to the WQOs for freshwater and estuaries:

- pH was outside the WQO range at sample at sample Site 001 this sampling round.
- Turbidity was outside of the WQO ranges at sample sites 002, 003 and 005 this sampling round.
- EC concentrations were inside of the expected range at all sampling sites this sampling round.
- DO concentrations were outside of the expected range at all sample site this sampling round. DO was outside the range at comparison sites in background sampling.

## 7.2 Laboratory Results

Ammonia, Filterable Reactive Phosphorous (FRP), Oxides of Nitrogen (NO<sub>x</sub>), Total Nitrogen, Total Phosphorus and Aluminium were above the WQOs for some sample sites shown in **Table 3**.

The chain of custody form is included in **Appendix D**. A summary of all lab results with comparison to WQOs is included in **Appendix E**. A full copy of the laboratory results is included in **Appendix F**.

**Table 3.** Parameters in exceedance of the trigger criteria for sampling conducted. Results above guidelines are highlighted.

|                                |      | Water Quality Objectives (WQOs) |              |               |                |             |               |          |           |               |
|--------------------------------|------|---------------------------------|--------------|---------------|----------------|-------------|---------------|----------|-----------|---------------|
| Analyte                        | Unit | Estuary                         | Fresh Water  | WC 001 (Down) | NWC 002 (Down) | EC 003 (Up) | DD 005 (Down) | 013 Trip | 014 Field | 015 Duplicate |
| Ammonia                        | mg/L | <b>0.015</b>                    | <b>0.02</b>  | 0.22          | 0.045          | 0.15        | 0.011         | <0.005   | <0.005    | 0.16          |
| Chlorophyll-a                  | mg/L | <b>4</b>                        | <b>5</b>     | <1            | 42             | 2           | 7             | <1       | <1        | 5             |
| Filterable Reactive Phosphorus | mg/L | <b>0.005</b>                    | <b>0.02</b>  | 0.006         | 0.008          | 0.074       | <0.005        | <0.005   | <0.005    | 0.074         |
| Oxides of Nitrogen             | mg/L | <b>0.015</b>                    | <b>0.040</b> | 0.3           | 0.2            | 0.08        | 2.2           | <0.005   | <0.005    | 0.09          |
| Total Nitrogen                 | mg/L | <b>0.30</b>                     | <b>0.35</b>  | 0.9           | 0.5            | 0.5         | 2.3           | <0.1     | <0.1      | 0.5           |
| Total Phosphorus               | mg/L | <b>0.030</b>                    | <b>0.025</b> | <0.02         | 0.08           | 0.1         | <0.02         | <0.02    | <0.02     | 0.1           |

When compared to the WQOs for Freshwater and Estuaries:

- Ammonia was above the WQOs at Sites 001, 002, and 003 this sampling round. Ammonia was above the WQOs at comparison sites in background sampling. Ammonia has decreased at sample Sites 001, and 002 but increased at sample Sites 003, and 005 when compared to the previous month.
- Chlorophyll-a was above WQOs at sample Sites 002, and 005 this sampling round. Chlorophyll-a was above the WQO at comparison sites in background sampling. Chlorophyll-a has increased at sample Site 002, 003, and 005 when compared to the previous month.
- Filterable Reactive Phosphorus was above WQOs at sample Sites 001, 002, and 003 this sampling round. Filterable Reactive Phosphorus has decreased at sample Site 001, increased at sample Sites 002 and 003 and remained the same at site 005 when compared to the previous month.
- NO<sub>x</sub> was above the WQOs criteria at all sites. NO<sub>x</sub> has increased at sample Sites 001, and 003 and decreased at all other sample sites when compared to the previous month.
- TN was above the WQOs criteria at all sites this sampling round. TN has decreased at all sample sites when compared to the previous month. TN was above the WQOs at comparison sites in baseline sampling.

- TP was above the WQOs criteria at all sample sites this sampling round. TP has decreased at Sites 001 and 005 and increased at all sample sites when compared to the previous month.
- All metals were within estuarine and freshwater criteria this month.
- Demeton was analysed and returned non-detectable results.
- TRH (C<sub>10</sub>-C<sub>40</sub>) was not detected at any sample site.

### 8.0 Quality Assurance and Quality Control

- Parameters analysed in the Trip Blank (013) and Field Blank (014) were below the laboratory detection limits for all analytes.
- The Duplicate Sample (015) was collected at Site 003 and is within acceptable limits for all analytes.
- The laboratory QA/QC is included in the results in **Appendix F**. All laboratory QA/QC was within acceptance criteria.

### 9.0 Summary of Results and Recommendations

- The month had low rainfall.
- Nutrients (Ammonia, NO<sub>x</sub>, TN, and TP) and Chlorophyll-a were high and exceeded some water quality parameters for some sites. This includes upstream and downstream sites in past sampling events. Exceedances in nutrients are therefore considered of natural occurrence.
- Elevated nutrients have been observed at all sampling locations including upstream and downstream sites in previous months and during baseline sampling. Therefore, based on the assessment of the July/August water quality data, the Tweed Valley Hospital Project construction activities are unlikely to be adversely impacting the downstream water quality. As such, the current soil and erosion controls implemented on site are considered to be effective.

Kind regards,

[REDACTED]

Environmental Engineer & Director

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## Appendix A. Site Photos



**Site 001 – West  
Creek  
(Downstream)  
(15/08/2023)**



**Site 002 –  
North-west  
Creek  
(Upstream)  
(15/08/2023)**



**Site 003 –  
East Creek  
(Upstream)  
(15/08/2023)**





**Site 005 –  
Dam Drain  
(Downstream)  
(15/08/2023)**

## Appendix B. Calibration certificate for Aqua troll

### Calibration Report

Instrument Aqua TROLL 400  
Serial Number 1008667  
Created 14/08/2023

Serial Number 997760  
Last Calibrated 14/08/2023

Calibration Details

Slope 1.088186  
Offset -0.03 mg/L

Calibration point 100%

Concentration 7.86 mg/L  
Temperature 23.31 °C  
Barometric Pressure 1,012.7 mbar

Calibration point 0%

Concentration 0.03 mg/L  
Temperature 26.51 °C

Serial Number 1008667  
Last Calibrated 14/08/2023

Calibration Details

Cell Constant 0.832  
Reference Temperature 25.00 °C  
TDS Conversion Factor (ppm) 0.65

Serial Number 996085  
Last Calibrated 14/08/2023

Calibration Details

Zero Offset -0.10 psi  
Reference Depth 0.00 ft  
Reference Offset 0.00 psi

Serial Number 22164  
Last Calibrated 14/08/2023

Calibration Details

Total Calibration Points 1

Calibration Point 1

pH of Buffer 7.00 pH  
pH mV -28.0 mV  
Temperature 25.19 °C

Slope and Offset 1

Slope -59.2 mV/pH  
Offset -28.0 mV

ORP

ORP Solution Zobell's  
Offset 24.9 mV  
Temperature 25.74 °C



## Appendix C. Full List of Sampling Analytes

### 3.7 Proposed Surface Water Quality Sampling Parameters

A summary of the proposed sampling analytes is provided below:

#### Field

- pH
- Turbidity
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential (ORP)
- Oil and grease

#### Laboratory

- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Major Cations & Hardness
- Ammonia
- Chlorophyll-a
- Filterable Reactive Phosphorus
- Nitrate
- Oxides of Nitrogen
- Total Nitrogen
- Total Phosphorus
- Aluminium (pH > 6.5) filtered
- Arsenic (filtered)
- Boron (filtered)
- Cadmium (filtered)
- Chromium (filtered)
- Copper (filtered)
- Cobalt (filtered)
- Lead (filtered)
- Manganese (filtered)
- Mercury (filtered)

- Nickel (filtered)
- Selenium (filtered)
- Silver (filtered)
- Zinc (filtered)
- Benzene
- Toluene
- Ethylbenzene
- Xylene - Total
- Naphthalene
- Total Recoverable Hydrocarbons (TRH)
- Organochlorine Pesticides (OCP)
  - 4,4'-DDE
  - 4,4'-DDT
  - Aldrin
  - g-BHC (Lindane)
  - Chlordane
  - Dieldrin
  - Endosulfan
  - Endrin
  - Heptachlor
  - Toxaphene
- Organophosphorus Pesticides (OPP)
  - Azinphos-methyl
  - Chlorpyrifos
  - Demeton-S
  - Diazinon
  - Dimethoate
  - Fenitrothion
  - Malathion

If a sample returns detectable concentrations of the analytes presented in Table 1, additional analyses may be required to enable comparison against additional trigger criteria or trace potential sources of contaminants. It is cost prohibitive to analyse these parameters unless required.

Table 1 Additional Analysis Requirements

| Analyte                        | Additional Analysis                                |
|--------------------------------|--|
| Total Recoverable Hydrocarbons | TRH Silica-gel Clean-up                            |
| Arsenic (filtered)             | Arsenic (III) (filtered)<br>Arsenic (V) (filtered) |
| Chromium (filtered)            | Chromium (CrVI) (filtered)                         |



## Appendix D. Chain of Custody Form

| <p>[Copyright and Confidential]</p> <h3 style="margin: 0;">CHAIN OF CUSTODY - Client</h3> <p style="margin: 0;"><b>ENVIROLAB GROUP - National phone number 1300 424 344</b></p>   |                                 |        |              |                | <p><b>Sydney Lab - Envirolab Services</b><br/>12 Ashley St, Chatswood, NSW 2067<br/>Ph: 02 9910 6200 / sydney@envirolab.com.au</p> <p><b>Perth Lab - MPL Laboratories</b><br/>16-18 Hayden Cr, Myaree, WA 6154<br/>Ph: 08 9317 2505 / lab@mpl.com.au</p> <p><b>Melbourne Lab - Envirolab Services</b><br/>25 Research Drive, Croydon South, VIC 3136<br/>Ph: 03 9763 2500 / melbourne@envirolab.com.au</p> <p><b>Adelaide Office - Envirolab Services</b><br/>7a The Parade, Norwood, SA 5067<br/>Ph: 08 7087 6800 / adelaide@envirolab.com.au</p> <p><b>Brisbane Office - Envirolab Services</b><br/>20a, 10-20 Depot St, Banyo, QLD 4014<br/>Ph: 07 3266 9532 / brisbane@envirolab.com.au</p> <p><b>Darwin Office - Envirolab Services</b><br/>Unit 7, 17 Willes Rd, Berrimah, NT 0820<br/>Ph: 08 8967 1201 / darwin@envirolab.com.au</p> |                  |                            |     |     |   |         |               |                 |         |  |         |         |            |                  |   |  |  |  |  |  |
|---|---------------------------------|--------|--------------|----------------|---|------------------|----------------------------|-----|-----|---|---------|---------------|-----------------|---------|--|---------|---------|------------|------------------|---|--|--|--|--|--|
| <p><b>Client:</b> Ecoteam</p> <p><b>Contact:</b> [Redacted]</p> <p><b>Project M:</b> [Redacted]</p> <p><b>Sampler:</b> [Redacted]</p> <p><b>Address:</b> 13 Ewing Street<br/>Lismore NSW 2480</p> <p><b>Phone:</b> 02 6621 5123</p> <p><b>Email:</b> [Redacted]</p> <p style="font-size: x-small;">Testing requirements - Chlorophyll-a &lt;4 mg/m3, Total Phosphorus &lt;0.025 mg/L, Silver &lt;0.05 ug/L, Low level OCPs and OPPs</p> |                                 |        |              |                | <p><b>Client Project Name / Number / Site etc (ie report title):</b><br/>SMC009.50 - Tweed Valley Hospital Project</p> <p><b>PO No.:</b></p> <p><b>Envirolab Quote No.:</b> 19SY228_Rev 1</p> <p><b>Date results required:</b><br/>Or choose: standard / same day / 1 day / 2 day / 3 day<br/><i>Note: Inform lab in advance if urgent turnaround is required - surcharges apply</i></p> <p><b>Additional report format:</b> esdat / equis /</p> <p><b>Lab Comments:</b><br/>Metals: :Al, As, B, Cd, Cr, Cu, Co, Pb, Mn, Hg, Ni, Se, Ag, Z.<br/>Cations: Na/K/Ca/Mg. Please hold Cr6 and AsIII/V until initial dissolved metals results are back.</p>   |                  |                            |     |     |   |         |               |                 |         |  |         |         |            |                  |   |  |  |  |  |  |
| Sample information  |                                 |        |              |                | Tests Required  |                  |                            |     |     |   |         |               |                 |         | Comments                                     |         |         |            |                  |   |  |  |  |  |  |
| Envirolab Sample ID   | Client Sample ID or information | Depth  | Date sampled | Type of sample | TRH/BTEXN   | Dissolved Metals | OCP + toxaphene + dieldrin | TSS | TDS | Cations + Hardness                              | Ammonia | Chlorophyll-a | Phosphate (FRP) | Nitrate | Nox  | Total N | Total P | Cr6+- HOLD | AsIII & V - HOLD | Provide as much information about the sample as you can |  |  |  |  |  |
| 1   | 001 - USW                       | 300 mm | 15-Aug       | Water          | X   | X                | X                          | X   | X   | X   | X       | X             | X               | X       | X  | X       | X       | X          |                  |   |  |  |  |  |  |
| 2   | 002 - USNW                      | 150 mm | 15-Aug       | Water          | X   | X                | X                          | X   | X   | X   | X       | X             | X               | X       | X  | X       | X       | X          |                  |   |  |  |  |  |  |
| 3   | 003 - DSE                       | 300 mm | 15-Aug       | Water          | X   | X                | X                          | X   | X   | X   | X       | X             | X               | X       | X  | X       | X       | X          |                  |   |  |  |  |  |  |
| 4   | 005 - Dam Drain                 | 150 mm | 15-Aug       | Water          | X   | X                | X                          | X   | X   | X   | X       | X             | X               | X       | X  | X       | X       | X          |                  |   |  |  |  |  |  |
| 5   | 013                             | 300 mm | 15-Aug       | Water          | X   | X                | X                          | X   | X   | X   | X       | X             | X               | X       | X  | X       | X       | X          |                  |   |  |  |  |  |  |
| 6   | 014                             | 300 mm | 15-Aug       | Water          | X   | X                | X                          | X   | X   | X   | X       | X             | X               | X       | X  | X       | X       | X          |                  |   |  |  |  |  |  |
| 7   | 015                             | 300 mm | 15-Aug       | Water          | X   | X                | X                          | X   | X   | X   | X       | X             | X               | X       | X  | X       | X       | X          |                  |   |  |  |  |  |  |
| <input type="checkbox"/> Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis  |                                 |        |              |                |   |                  |                            |     |     |   |         |               |                 |         |  |         |         |            |                  |   |  |  |  |  |  |
| <b>Relinquished by (Company):</b> Ecoteam   |                                 |        |              |                | <b>Received by (Company):</b> ELS.  |                  |                            |     |     | <b>Lab Use Only</b>                             |         |               |                 |         |  |         |         |            |                  |   |  |  |  |  |  |
| <b>Print Name:</b> Jeffery Presbury   |                                 |        |              |                | <b>Print Name:</b> [Signature]  |                  |                            |     |     | <b>Job number:</b> 33066                        |         |               |                 |         | <b>Cooling:</b> Ice / Ice pack / None        |         |         |            |                  |   |  |  |  |  |  |
| <b>Date &amp; Time:</b> 15/08/2023  |                                 |        |              |                | <b>Date &amp; Time:</b> 16/8/23 1100  |                  |                            |     |     | <b>Temperature:</b> 4                           |         |               |                 |         | <b>Security seal:</b> Intact / Broken / None |         |         |            |                  |   |  |  |  |  |  |
| <b>Signature:</b> Jeffery Presbury  |                                 |        |              |                | <b>Signature:</b> [Signature]   |                  |                            |     |     | <b>TAT Req - SAME day / 1 / 2 / 3 / 4 / STD</b> |         |               |                 |         |  |         |         |            |                  |   |  |  |  |  |  |

## Appendix E. Summary of Lab Results compared to WQOs

|   |                   | Water Quality Objectives (WQOs) |             | Sample Codes |         |        |        |  |          |           |               |
|---|-------------------|---------------------------------|-------------|--------------|---------|--------|--------|--|----------|-----------|---------------|
| Analyte   | Unit              | Estuary                         | Fresh Water | WC 001       | NWC 002 | EC 003 | DD 005 |  | 013 Trip | 014 Field | 015 Duplicate |
| Total Suspended Solids (TSS)                    | mg/L              | N/A                             | N/A         | <5           | 6       | <5     | <5     |  | <5       | <5        | <5            |
| Total Dissolved Solids (TDS)                    | mg/L              | N/A                             | N/A         | 940          | 200     | 100    | 130    |  | <5       | <5        | 140           |
| <b>Major Cations (dissolved) and Hardness</b>   |                   |                                 |             |              |         |        |        |  |          |           |               |
| Sodium  | mg/L              | N/A                             | N/A         | 85           | 25      | 20     | 19     |  | <0.5     | <0.5      | 20            |
| Potassium                                       | mg/L              | N/A                             | N/A         | 8.4          | 2       | 1      | 1      |  | <0.5     | <0.5      | 1             |
| Calcium   | mg/L              | N/A                             | N/A         | 170          | 22      | 10     | 4      |  | <0.5     | <0.5      | 10            |
| Magnesium                                       | mg/L              | N/A                             | N/A         | 32           | 6.6     | 4      | 5      |  | <0.5     | <0.5      | 3             |
| Hardness mgCaCO <sub>3</sub> /L                 |                   | N/A                             | N/A         | 550          | 83      | 40     | 31     |  | <3       | <3        | 40            |
| <b>Nutrients</b>                                |                   |                                 |             |              |         |        |        |  |          |           |               |
| Ammonia   | mg/L              | 0.015                           | 0.02        | 0.22         | 0.045   | 0.15   | 0.011  |  | <0.005   | <0.005    | 0.16          |
| Chlorophyll-a                                   | mg/m <sup>3</sup> | 4                               | 5           | <1           | 42      | 2      | 7      |  | <1       | <1        | 5             |
| Filterable Reactive Phosphorus                  | mg/L              | 0.005                           | 0.02        | 0.006        | 0.008   | 0.074  | <0.005 |  | <0.005   | <0.005    | 0.074         |
| Nitrate   | mg/L              | N/A                             | N/A         | 0.31         | 0.17    | 0.078  | 2.2    |  | <0.005   | <0.005    | 0.086         |
| Oxides of Nitrogen                              | mg/L              | 0.015                           | 0.040       | 0.3          | 0.2     | 0.08   | 2.2    |  | <0.005   | <0.005    | 0.09          |
| Total Nitrogen                                  | mg/L              | 0.30                            | 0.35        | 0.9          | 0.5     | 0.5    | 2.3    |  | <0.1     | <0.1      | 0.5           |
| Total Phosphorus                                | mg/L              | 0.030                           | 0.025       | <0.02        | 0.08    | 0.1    | <0.02  |  | <0.02    | <0.02     | 0.1           |
| <b>Metals – All metals are Dissolved Metals</b> |                   |                                 |             |              |         |        |        |  |          |           |               |
| Aluminium                                       | µg/L              | N/A                             | 55          | <10          | 20      | 30     | <10    |  | <10      | <10       | 30            |
| Arsenic   | µg/L              | N/A                             | 13          | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Boron   | µg/L              | N/A                             | 370         | 200          | 80      | 40     | 50     |  | <20      | <20       | 40            |
| Cadmium   | µg/L              | 5.5                             | 0.2         | <0.1         | <0.1    | <0.1   | <0.1   |  | <0.1     | <0.1      | <0.1          |
| Chromium  | µg/L              | 4.4                             | 1.0         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Copper  | µg/L              | 1.3                             | 1.4         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Cobalt  | µg/L              | 1.0                             | N/A         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Lead  | µg/L              | 4.4                             | 3.4         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Manganese                                       | µg/L              | N/A                             | 1,900       | 190          | 84      | 65     | 20     |  | <1       | <1        | 66            |
| Mercury   | µg/L              | 0.4                             | 0.6         | <0.05        | <0.05   | <0.05  | <0.05  |  | <0.05    | <0.05     | <0.05         |
| Nickel  | µg/L              | 70                              | 11          | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Selenium  | µg/L              | N/A                             | 11          | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Silver  | µg/L              | 1.4                             | 0.05        | <0.05        | <0.05   | <0.05  | <0.05  |  | <0.05    | <0.05     | <0.05         |
| Zinc  | µg/L              | 15                              | 8.0         | 13           | <1      | 3      | 2      |  | <1       | <1        | 4             |



|   |      | Water Quality Objectives (WQOs) |             | Sample Codes |         |        |        |  |          |           |               |
|---|------|---------------------------------|-------------|--------------|---------|--------|--------|--|----------|-----------|---------------|
| Analyte   | Unit | Estuary                         | Fresh Water | WC 001       | NWC 002 | EC 003 | DD 005 |  | 013 Trip | 014 Field | 015 Duplicate |
| <b>Hydrocarbons</b>   |      |                                 |             |              |         |        |        |  |          |           |               |
| Benzene   | µg/L | 950                             | 700         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Toluene   | µg/L | N/A                             | N/A         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Ethylbenzene  | µg/L | N/A                             | N/A         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Xylene  | µg/L | N/A                             | 550         | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| Naphthalene   | µg/L | 70                              | 16          | <1           | <1      | <1     | <1     |  | <1       | <1        | <1            |
| TRH C <sub>6</sub> - C <sub>10</sub>                        | µg/L | N/A                             | N/A         | <10          | <10     | <10    | <10    |  | <10      | <10       | <10           |
| TRH C <sub>10</sub> - C <sub>16</sub>                       | µg/L | N/A                             | N/A         | <50          | <50     | <50    | <50    |  | <50      | <50       | <50           |
| TRH C <sub>16</sub> - C <sub>34</sub>                       | µg/L | N/A                             | N/A         | <100         | <100    | <100   | <100   |  | <100     | <100      | <100          |
| TRH >C <sub>34</sub> - C <sub>40</sub>                      | µg/L | N/A                             | N/A         | <100         | <100    | <100   | <100   |  | <100     | <100      | <100          |
| TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)          | µg/L | N/A                             | N/A         | <10          | <10     | <10    | <10    |  | <10      | <10       | <10           |
| TRH >C <sub>10</sub> -C <sub>16</sub> less Naphthalene (F2) | µg/L | N/A                             | N/A         | <50          | <50     | <50    | <50    |  | <50      | <50       | <50           |
| <b>Organochlorine Pesticides (OCP)</b>                      |      |                                 |             |              |         |        |        |  |          |           |               |
| 4,4'-DDE  | µg/L | N/A                             | N/A         | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| 4,4'-DDT  | µg/L | N/A                             | 0.01        | <0.006       | <0.006  | <0.006 | <0.006 |  | <0.006   | <0.006    | <0.006        |
| Aldrin  | µg/L | N/A                             | N/A         | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| g-BHC   | µg/L | N/A                             | 0.2         | <0.05        | <0.05   | <0.05  | <0.05  |  | <0.05    | <0.05     | <0.05         |
| Chlordane   | µg/L | N/A                             | 0.08        | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| Dieldrin  | µg/L | N/A                             | N/A         | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| Endosulfan  | µg/L | 0.01                            | 0.2         | <0.02        | <0.02   | <0.02  | <0.02  |  | <0.02    | <0.02     | <0.02         |
| Endrin  | µg/L | 0.02                            | 0.008       | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| Heptachlor  | µg/L | N/A                             | 0.09        | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| Toxaphene   | µg/L | N/A                             | 0.2         | <2           | <2      | <2     | <2     |  | <2       | <2        | <2            |
| <b>Organophosphorus Pesticides (OPP)</b>                    |      |                                 |             |              |         |        |        |  |          |           |               |
| Azinphos-methyl   | µg/L | N/A                             | 0.02        | <0.02        | <0.02   | <0.02  | <0.02  |  | <0.02    | <0.02     | <0.02         |
| Chlorpyrifos  | µg/L | 0.009                           | 0.01        | <0.009       | <0.009  | <0.009 | <0.009 |  | <0.009   | <0.009    | <0.009        |
| Demeton-S   | µg/L | N/A                             | N/A         | <0.02        | <0.02   | <0.02  | <0.02  |  | <0.02    | <0.02     | <0.02         |
| Diazinon  | µg/L | N/A                             | 0.01        | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| Dimethoate  | µg/L | N/A                             | 0.15        | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| Fenitrothion  | µg/L | N/A                             | 0.2         | <0.01        | <0.01   | <0.01  | <0.01  |  | <0.01    | <0.01     | <0.01         |
| Malathion   | µg/L | N/A                             | 0.05        | <0.05        | <0.05   | <0.05  | <0.05  |  | <0.05    | <0.05     | <0.05         |

## Appendix F. Full Laboratory Results



## CERTIFICATE OF ANALYSIS 330660

### Client Details

|                  |                                     |
|------------------|-------------------------------------|
| <b>Client</b>    | Ecoteam                             |
| <b>Attention</b> | [REDACTED]                          |
| <b>Address</b>   | 13 Ewing Street, Lismore, NSW, 2480 |

### Sample Details

|   |  |
|---|--|
| <b>Your Reference</b>                       | <b>SMC009.50 - Tweed Valley Hospital Project</b> |
| <b>Number of Samples</b>                    | 7 Water  |
| <b>Date samples received</b>                | 16/08/2023                                       |
| <b>Date completed instructions received</b> | 16/08/2023                                       |

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### Report Details

|   |            |
|---|------------|
| <b>Date results requested by</b>  | 23/08/2023 |
| <b>Date of Issue</b>  | 23/08/2023 |
| NATA Accreditation Number 2901. This document shall not be reproduced except in full.                       |            |
| Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b> |            |

#### Results Approved By

[REDACTED] Thomas, Senior Chemist  
 [REDACTED] well, Development Chemist  
 [REDACTED] arawickrama, Senior Chemist  
 [REDACTED] hemist

[REDACTED] Laboratory Manager





Client Reference: SMC009.50 - Tweed Valley Hospital Project

| vTRH(C6-C10)/BTEXN in Water                         |       |            |            |            |                 |            |
|---|-------|------------|------------|------------|-----------------|------------|
| Our Reference                                       |       | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference                                      | UNITS | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth   |       | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled  |       | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample                                      |       | Water      | Water      | Water      | Water           | Water      |
| Date extracted                                      | -     | 18/08/2023 | 18/08/2023 | 18/08/2023 | 18/08/2023      | 18/08/2023 |
| Date analysed                                       | -     | 21/08/2023 | 21/08/2023 | 21/08/2023 | 21/08/2023      | 21/08/2023 |
| TRH C <sub>6</sub> - C <sub>9</sub>                 | µg/L  | <10        | <10        | <10        | <10             | <10        |
| TRH C <sub>6</sub> - C <sub>10</sub>                | µg/L  | <10        | <10        | <10        | <10             | <10        |
| TRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | µg/L  | <10        | <10        | <10        | <10             | <10        |
| Benzene   | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Toluene   | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Ethylbenzene  | µg/L  | <1         | <1         | <1         | <1              | <1         |
| m+p-xylene  | µg/L  | <2         | <2         | <2         | <2              | <2         |
| o-xylene  | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Naphthalene   | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Surrogate Dibromofluoromethane                      | %     | 101        | 100        | 99         | 100             | 100        |
| Surrogate toluene-d8                                | %     | 101        | 100        | 100        | 100             | 100        |
| Surrogate 4-BFB                                     | %     | 99         | 100        | 99         | 98              | 100        |

| vTRH(C6-C10)/BTEXN in Water                         |       |            |            |
|---|-------|------------|------------|
| Our Reference                                       |       | 330660-6   | 330660-7   |
| Your Reference                                      | UNITS | 014        | 015        |
| Depth   |       | 300mm      | 300mm      |
| Date Sampled  |       | 15/08/2023 | 15/08/2023 |
| Type of sample                                      |       | Water      | Water      |
| Date extracted                                      | -     | 18/08/2023 | 18/08/2023 |
| Date analysed                                       | -     | 21/08/2023 | 21/08/2023 |
| TRH C <sub>6</sub> - C <sub>9</sub>                 | µg/L  | <10        | <10        |
| TRH C <sub>6</sub> - C <sub>10</sub>                | µg/L  | <10        | <10        |
| TRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | µg/L  | <10        | <10        |
| Benzene   | µg/L  | <1         | <1         |
| Toluene   | µg/L  | <1         | <1         |
| Ethylbenzene  | µg/L  | <1         | <1         |
| m+p-xylene  | µg/L  | <2         | <2         |
| o-xylene  | µg/L  | <1         | <1         |
| Naphthalene   | µg/L  | <1         | <1         |
| Surrogate Dibromofluoromethane                      | %     | 100        | 100        |
| Surrogate toluene-d8                                | %     | 100        | 100        |
| Surrogate 4-BFB                                     | %     | 98         | 99         |

Client Reference: SMC009.50 - Tweed Valley Hospital Project

| svTRH (C10-C40) in Water                                     |       |            |            |            |                 |            |
|--|-------|------------|------------|------------|-----------------|------------|
| Our Reference  |       | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference   | UNITS | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth  |       | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled   |       | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample   |       | Water      | Water      | Water      | Water           | Water      |
| Date extracted   | -     | 17/08/2023 | 17/08/2023 | 17/08/2023 | 17/08/2023      | 17/08/2023 |
| Date analysed  | -     | 18/08/2023 | 18/08/2023 | 18/08/2023 | 18/08/2023      | 18/08/2023 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | µg/L  | <50        | <50        | <50        | <50             | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | µg/L  | <100       | <100       | <100       | <100            | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | µg/L  | <100       | <100       | <100       | <100            | <100       |
| TRH >C <sub>10</sub> - C <sub>16</sub>                       | µg/L  | <50        | <50        | <50        | <50             | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | µg/L  | <50        | <50        | <50        | <50             | <50        |
| TRH >C <sub>16</sub> - C <sub>34</sub>                       | µg/L  | <100       | <100       | <100       | <100            | <100       |
| TRH >C <sub>34</sub> - C <sub>40</sub>                       | µg/L  | <100       | <100       | <100       | <100            | <100       |
| Surrogate o-Terphenyl  | %     | 69         | 75         | 79         | 74              | 68         |

| svTRH (C10-C40) in Water                                     |       |            |            |
|--|-------|------------|------------|
| Our Reference  |       | 330660-6   | 330660-7   |
| Your Reference   | UNITS | 014        | 015        |
| Depth  |       | 300mm      | 300mm      |
| Date Sampled   |       | 15/08/2023 | 15/08/2023 |
| Type of sample   |       | Water      | Water      |
| Date extracted   | -     | 17/08/2023 | 17/08/2023 |
| Date analysed  | -     | 18/08/2023 | 18/08/2023 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | µg/L  | <50        | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | µg/L  | <100       | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | µg/L  | <100       | <100       |
| TRH >C <sub>10</sub> - C <sub>16</sub>                       | µg/L  | <50        | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | µg/L  | <50        | <50        |
| TRH >C <sub>16</sub> - C <sub>34</sub>                       | µg/L  | <100       | <100       |
| TRH >C <sub>34</sub> - C <sub>40</sub>                       | µg/L  | <100       | <100       |
| Surrogate o-Terphenyl  | %     | 77         | 73         |

Client Reference: SMC009.50 - Tweed Valley Hospital Project

| OCs in Water - Low Level |       |            |            |            |                 |            |
|--------------------------|-------|------------|------------|------------|-----------------|------------|
| Our Reference            |       | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference           | UNITS | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth                    |       | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled             |       | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample           |       | Water      | Water      | Water      | Water           | Water      |
| Date extracted           | -     | 17/08/2023 | 17/08/2023 | 17/08/2023 | 17/08/2023      | 17/08/2023 |
| Date analysed            | -     | 18/08/2023 | 18/08/2023 | 18/08/2023 | 18/08/2023      | 18/08/2023 |
| alpha-BHC                | µg/L  | <0.05      | <0.05      | <0.05      | <0.05           | <0.05      |
| HCB                      | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| beta-BHC                 | µg/L  | <0.05      | <0.05      | <0.05      | <0.05           | <0.05      |
| gamma-BHC                | µg/L  | <0.05      | <0.05      | <0.05      | <0.05           | <0.05      |
| Heptachlor               | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| delta-BHC                | µg/L  | <0.05      | <0.05      | <0.05      | <0.05           | <0.05      |
| Aldrin                   | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Heptachlor Epoxide       | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| gamma-Chlordane          | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| alpha-Chlordane          | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Endosulfan I             | µg/L  | <0.02      | <0.02      | <0.02      | <0.02           | <0.02      |
| pp-DDE                   | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Dieldrin                 | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Endrin                   | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Endosulfan II            | µg/L  | <0.02      | <0.02      | <0.02      | <0.02           | <0.02      |
| pp-DDD                   | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Endrin Aldehyde          | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| pp-DDT                   | µg/L  | <0.006     | <0.006     | <0.006     | <0.006          | <0.006     |
| Endosulfan Sulphate      | µg/L  | <0.02      | <0.02      | <0.02      | <0.02           | <0.02      |
| Methoxychlor             | µg/L  | <0.02      | <0.02      | <0.02      | <0.02           | <0.02      |
| Surrogate TCMX           | %     | 103        | 109        | 119        | 110             | 101        |



| OCPs in Water - Low Level |       |            |            |
|---------------------------|-------|------------|------------|
| Our Reference             |       | 330660-6   | 330660-7   |
| Your Reference            | UNITS | 014        | 015        |
| Depth                     |       | 300mm      | 300mm      |
| Date Sampled              |       | 15/08/2023 | 15/08/2023 |
| Type of sample            |       | Water      | Water      |
| Date extracted            | -     | 17/08/2023 | 17/08/2023 |
| Date analysed             | -     | 18/08/2023 | 18/08/2023 |
| alpha-BHC                 | µg/L  | <0.05      | <0.05      |
| HCB                       | µg/L  | <0.01      | <0.01      |
| beta-BHC                  | µg/L  | <0.05      | <0.05      |
| gamma-BHC                 | µg/L  | <0.05      | <0.05      |
| Heptachlor                | µg/L  | <0.01      | <0.01      |
| delta-BHC                 | µg/L  | <0.05      | <0.05      |
| Aldrin                    | µg/L  | <0.01      | <0.01      |
| Heptachlor Epoxide        | µg/L  | <0.01      | <0.01      |
| gamma-Chlordane           | µg/L  | <0.01      | <0.01      |
| alpha-Chlordane           | µg/L  | <0.01      | <0.01      |
| Endosulfan I              | µg/L  | <0.02      | <0.02      |
| pp-DDE                    | µg/L  | <0.01      | <0.01      |
| Dieldrin                  | µg/L  | <0.01      | <0.01      |
| Endrin                    | µg/L  | <0.01      | <0.01      |
| Endosulfan II             | µg/L  | <0.02      | <0.02      |
| pp-DDD                    | µg/L  | <0.01      | <0.01      |
| Endrin Aldehyde           | µg/L  | <0.01      | <0.01      |
| pp-DDT                    | µg/L  | <0.006     | <0.006     |
| Endosulfan Sulphate       | µg/L  | <0.02      | <0.02      |
| Methoxychlor              | µg/L  | <0.02      | <0.02      |
| Surrogate TCMX            | %     | 116        | 107        |

Client Reference: SMC009.50 - Tweed Valley Hospital Project

| OP in water LL ANZECCF/ADWG |       |            |            |            |                 |            |
|-----------------------------|-------|------------|------------|------------|-----------------|------------|
| Our Reference               |       | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference              | UNITS | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth                       |       | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled                |       | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample              |       | Water      | Water      | Water      | Water           | Water      |
| Date extracted              | -     | 17/08/2023 | 17/08/2023 | 17/08/2023 | 17/08/2023      | 17/08/2023 |
| Date analysed               | -     | 18/08/2023 | 18/08/2023 | 18/08/2023 | 18/08/2023      | 18/08/2023 |
| Azinphos-methyl (Guthion)   | µg/L  | <0.02      | <0.02      | <0.02      | <0.02           | <0.02      |
| Bromophos ethyl             | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Chlorpyrifos                | µg/L  | <0.009     | <0.009     | <0.009     | <0.009          | <0.009     |
| Chlorpyrifos-methyl         | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Diazinon                    | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Dichlorovos                 | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Dimethoate                  | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Ethion                      | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Fenitrothion                | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Malathion                   | µg/L  | <0.05      | <0.05      | <0.05      | <0.05           | <0.05      |
| Ronnel                      | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Parathion                   | µg/L  | <0.004     | <0.004     | <0.004     | <0.004          | <0.004     |
| Coumaphos                   | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Disulfoton                  | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Fenamiphos                  | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Fenthion                    | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Methidathion                | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Mevinphos                   | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Methyl Parathion            | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Phorate                     | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Phosalone                   | µg/L  | <0.01      | <0.01      | <0.01      | <0.01           | <0.01      |
| Surrogate TCMX              | %     | 103        | 109        | 119        | 110             | 101        |

| OP in water LL ANZECCF/ADWG |       |            |            |
|-----------------------------|-------|------------|------------|
| Our Reference               |       | 330660-6   | 330660-7   |
| Your Reference              | UNITS | 014        | 015        |
| Depth                       |       | 300mm      | 300mm      |
| Date Sampled                |       | 15/08/2023 | 15/08/2023 |
| Type of sample              |       | Water      | Water      |
| Date extracted              | -     | 17/08/2023 | 17/08/2023 |
| Date analysed               | -     | 18/08/2023 | 18/08/2023 |
| Azinphos-methyl (Guthion)   | µg/L  | <0.02      | <0.02      |
| Bromophos ethyl             | µg/L  | <0.01      | <0.01      |
| Chlorpyrifos                | µg/L  | <0.009     | <0.009     |
| Chlorpyrifos-methyl         | µg/L  | <0.01      | <0.01      |
| Diazinon                    | µg/L  | <0.01      | <0.01      |
| Dichlorovos                 | µg/L  | <0.01      | <0.01      |
| Dimethoate                  | µg/L  | <0.01      | <0.01      |
| Ethion                      | µg/L  | <0.01      | <0.01      |
| Fenitrothion                | µg/L  | <0.01      | <0.01      |
| Malathion                   | µg/L  | <0.05      | <0.05      |
| Ronnel                      | µg/L  | <0.01      | <0.01      |
| Parathion                   | µg/L  | <0.004     | <0.004     |
| Coumaphos                   | µg/L  | <0.01      | <0.01      |
| Disulfoton                  | µg/L  | <0.01      | <0.01      |
| Fenamiphos                  | µg/L  | <0.01      | <0.01      |
| Fenthion                    | µg/L  | <0.01      | <0.01      |
| Methidathion                | µg/L  | <0.01      | <0.01      |
| Mevinphos                   | µg/L  | <0.01      | <0.01      |
| Methyl Parathion            | µg/L  | <0.01      | <0.01      |
| Phorate                     | µg/L  | <0.01      | <0.01      |
| Phosalone                   | µg/L  | <0.01      | <0.01      |
| Surrogate TCMX              | %     | 116        | 107        |



Client Reference: SMC009.50 - Tweed Valley Hospital Project

| Miscellaneous Organics - water                |       |            |            |            |                 |            |
|---|-------|------------|------------|------------|-----------------|------------|
| Our Reference                                 |       | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference                                | UNITS | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth   |       | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled                                  |       | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample                                |       | Water      | Water      | Water      | Water           | Water      |
| Date prepared                                 | -     | 17/08/2023 | 17/08/2023 | 17/08/2023 | 17/08/2023      | 17/08/2023 |
| Date analysed                                 | -     | 21/08/2023 | 21/08/2023 | 21/08/2023 | 21/08/2023      | 21/08/2023 |
| Toxaphene*                                    | µg/L  | <2         | <2         | <2         | <2              | <2         |
| Demeton-O                                     | µg/L  | <0.2       | <0.2       | <0.2       | <0.2            | <0.2       |
| Demeton-S                                     | µg/L  | <0.2       | <0.2       | <0.2       | <0.2            | <0.2       |
| Surrogate <i>p</i> -Terphenyl-d <sub>14</sub> | %     | 93         | 104        | 110        | 87              | 77         |

| Miscellaneous Organics - water                |       |            |            |
|---|-------|------------|------------|
| Our Reference                                 |       | 330660-6   | 330660-7   |
| Your Reference                                | UNITS | 014        | 015        |
| Depth   |       | 300mm      | 300mm      |
| Date Sampled                                  |       | 15/08/2023 | 15/08/2023 |
| Type of sample                                |       | Water      | Water      |
| Date prepared                                 | -     | 17/08/2023 | 17/08/2023 |
| Date analysed                                 | -     | 21/08/2023 | 21/08/2023 |
| Toxaphene*                                    | µg/L  | <2         | <2         |
| Demeton-O                                     | µg/L  | <0.2       | <0.2       |
| Demeton-S                                     | µg/L  | <0.2       | <0.2       |
| Surrogate <i>p</i> -Terphenyl-d <sub>14</sub> | %     | 119        | 102        |

Client Reference: SMC009.50 - Tweed Valley Hospital Project

| HM in water - dissolved |       |            |            |            |                 |            |
|-------------------------|-------|------------|------------|------------|-----------------|------------|
| Our Reference           |       | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference          | UNITS | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth                   |       | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled            |       | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample          |       | Water      | Water      | Water      | Water           | Water      |
| Date prepared           | -     | 18/08/2023 | 18/08/2023 | 18/08/2023 | 18/08/2023      | 18/08/2023 |
| Date analysed           | -     | 18/08/2023 | 18/08/2023 | 18/08/2023 | 18/08/2023      | 18/08/2023 |
| Aluminium-Dissolved     | µg/L  | <10        | 20         | 30         | <10             | <10        |
| Arsenic-Dissolved       | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Boron-Dissolved         | µg/L  | 200        | 80         | 40         | 50              | <20        |
| Cadmium-Dissolved       | µg/L  | <0.1       | <0.1       | <0.1       | <0.1            | <0.1       |
| Chromium-Dissolved      | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Copper-Dissolved        | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Cobalt-Dissolved        | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Lead-Dissolved          | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Manganese-Dissolved     | µg/L  | 190        | 84         | 65         | 20              | <1         |
| Mercury-Dissolved       | µg/L  | <0.05      | <0.05      | <0.05      | <0.05           | <0.05      |
| Nickel-Dissolved        | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Selenium-Dissolved      | µg/L  | <1         | <1         | <1         | <1              | <1         |
| Silver-Dissolved        | µg/L  | <0.05      | <0.05      | <0.05      | <0.05           | <0.05      |
| Zinc-Dissolved          | µg/L  | 13         | <1         | 3          | 2               | <1         |

| HM in water - dissolved |       |            |            |
|-------------------------|-------|------------|------------|
| Our Reference           |       | 330660-6   | 330660-7   |
| Your Reference          | UNITS | 014        | 015        |
| Depth                   |       | 300mm      | 300mm      |
| Date Sampled            |       | 15/08/2023 | 15/08/2023 |
| Type of sample          |       | Water      | Water      |
| Date prepared           | -     | 18/08/2023 | 18/08/2023 |
| Date analysed           | -     | 18/08/2023 | 18/08/2023 |
| Aluminium-Dissolved     | µg/L  | <10        | 30         |
| Arsenic-Dissolved       | µg/L  | <1         | <1         |
| Boron-Dissolved         | µg/L  | <20        | 40         |
| Cadmium-Dissolved       | µg/L  | <0.1       | <0.1       |
| Chromium-Dissolved      | µg/L  | <1         | <1         |
| Copper-Dissolved        | µg/L  | <1         | <1         |
| Cobalt-Dissolved        | µg/L  | <1         | <1         |
| Lead-Dissolved          | µg/L  | <1         | <1         |
| Manganese-Dissolved     | µg/L  | <1         | 66         |
| Mercury-Dissolved       | µg/L  | <0.05      | <0.05      |
| Nickel-Dissolved        | µg/L  | <1         | <1         |
| Selenium-Dissolved      | µg/L  | <1         | <1         |
| Silver-Dissolved        | µg/L  | <0.05      | <0.05      |
| Zinc-Dissolved          | µg/L  | <1         | 4          |



**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| Metals in Waters - Acid extractable |       |            |            |            |                 |            |
|-------------------------------------|-------|------------|------------|------------|-----------------|------------|
| Our Reference                       |       | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference                      | UNITS | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth                               |       | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled                        |       | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample                      |       | Water      | Water      | Water      | Water           | Water      |
| Date prepared                       | -     | 17/08/2023 | 17/08/2023 | 17/08/2023 | 17/08/2023      | 17/08/2023 |
| Date analysed                       | -     | 17/08/2023 | 17/08/2023 | 17/08/2023 | 17/08/2023      | 17/08/2023 |
| Phosphorus - Total                  | mg/L  | <0.02      | 0.08       | 0.1        | <0.02           | <0.02      |

| Metals in Waters - Acid extractable |       |            |            |
|-------------------------------------|-------|------------|------------|
| Our Reference                       |       | 330660-6   | 330660-7   |
| Your Reference                      | UNITS | 014        | 015        |
| Depth                               |       | 300mm      | 300mm      |
| Date Sampled                        |       | 15/08/2023 | 15/08/2023 |
| Type of sample                      |       | Water      | Water      |
| Date prepared                       | -     | 17/08/2023 | 17/08/2023 |
| Date analysed                       | -     | 17/08/2023 | 17/08/2023 |
| Phosphorus - Total                  | mg/L  | <0.02      | 0.1        |

**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| Cations in water Dissolved |                        |            |            |            |                 |            |
|----------------------------|------------------------|------------|------------|------------|-----------------|------------|
| Our Reference              |                        | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference             | UNITS                  | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth                      |                        | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled               |                        | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample             |                        | Water      | Water      | Water      | Water           | Water      |
| Date digested              | -                      | 21/08/2023 | 21/08/2023 | 21/08/2023 | 21/08/2023      | 21/08/2023 |
| Date analysed              | -                      | 21/08/2023 | 21/08/2023 | 21/08/2023 | 21/08/2023      | 21/08/2023 |
| Sodium - Dissolved         | mg/L                   | 85         | 25         | 20         | 19              | <0.5       |
| Potassium - Dissolved      | mg/L                   | 8.4        | 2          | 1          | 1               | <0.5       |
| Calcium - Dissolved        | mg/L                   | 170        | 22         | 10         | 4               | <0.5       |
| Magnesium - Dissolved      | mg/L                   | 32         | 6.6        | 4          | 5.0             | <0.5       |
| Hardness                   | mgCaCO <sub>3</sub> /L | 550        | 83         | 40         | 31              | <3         |

| Cations in water Dissolved |                        |            |            |
|----------------------------|------------------------|------------|------------|
| Our Reference              |                        | 330660-6   | 330660-7   |
| Your Reference             | UNITS                  | 014        | 015        |
| Depth                      |                        | 300mm      | 300mm      |
| Date Sampled               |                        | 15/08/2023 | 15/08/2023 |
| Type of sample             |                        | Water      | Water      |
| Date digested              | -                      | 21/08/2023 | 21/08/2023 |
| Date analysed              | -                      | 21/08/2023 | 21/08/2023 |
| Sodium - Dissolved         | mg/L                   | <0.5       | 20         |
| Potassium - Dissolved      | mg/L                   | <0.5       | 1          |
| Calcium - Dissolved        | mg/L                   | <0.5       | 10         |
| Magnesium - Dissolved      | mg/L                   | <0.5       | 3          |
| Hardness                   | mgCaCO <sub>3</sub> /L | <3         | 40         |

**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| Miscellaneous Inorganics      |                   |            |            |            |                 |            |
|-------------------------------|-------------------|------------|------------|------------|-----------------|------------|
| Our Reference                 |                   | 330660-1   | 330660-2   | 330660-3   | 330660-4        | 330660-5   |
| Your Reference                | UNITS             | 001 - USW  | 002 - USNW | 003 - DSE  | 005 - Dam Drain | 013        |
| Depth                         |                   | 300mm      | 150mm      | 300mm      | 150mm           | 300mm      |
| Date Sampled                  |                   | 15/08/2023 | 15/08/2023 | 15/08/2023 | 15/08/2023      | 15/08/2023 |
| Type of sample                |                   | Water      | Water      | Water      | Water           | Water      |
| Date prepared                 | -                 | 16/08/2023 | 16/08/2023 | 16/08/2023 | 16/08/2023      | 16/08/2023 |
| Date analysed                 | -                 | 16/08/2023 | 16/08/2023 | 16/08/2023 | 16/08/2023      | 16/08/2023 |
| Total Suspended Solids        | mg/L              | <5         | 6          | <5         | <5              | <5         |
| Total Dissolved Solids (grav) | mg/L              | 940        | 200        | 100        | 130             | <5         |
| Ammonia as N in water         | mg/L              | 0.22       | 0.045      | 0.15       | 0.011           | <0.005     |
| Chlorophyll a                 | mg/m <sup>3</sup> | <1         | 42         | 2          | 7               | <1         |
| Phosphate as P in water       | mg/L              | 0.006      | 0.008      | 0.074      | <0.005          | <0.005     |
| Nitrate as N in water         | mg/L              | 0.31       | 0.17       | 0.078      | 2.2             | <0.005     |
| NOx as N in water             | mg/L              | 0.3        | 0.2        | 0.08       | 2.2             | <0.005     |
| Total Nitrogen in water       | mg/L              | 0.9        | 0.5        | 0.5        | 2.3             | <0.1       |

| Miscellaneous Inorganics      |                   |            |            |
|-------------------------------|-------------------|------------|------------|
| Our Reference                 |                   | 330660-6   | 330660-7   |
| Your Reference                | UNITS             | 014        | 015        |
| Depth                         |                   | 300mm      | 300mm      |
| Date Sampled                  |                   | 15/08/2023 | 15/08/2023 |
| Type of sample                |                   | Water      | Water      |
| Date prepared                 | -                 | 16/08/2023 | 16/08/2023 |
| Date analysed                 | -                 | 16/08/2023 | 16/08/2023 |
| Total Suspended Solids        | mg/L              | <5         | <5         |
| Total Dissolved Solids (grav) | mg/L              | <5         | 140        |
| Ammonia as N in water         | mg/L              | <0.005     | 0.16       |
| Chlorophyll a                 | mg/m <sup>3</sup> | <1         | 5          |
| Phosphate as P in water       | mg/L              | <0.005     | 0.074      |
| Nitrate as N in water         | mg/L              | <0.005     | 0.086      |
| NOx as N in water             | mg/L              | <0.005     | 0.09       |
| Total Nitrogen in water       | mg/L              | <0.1       | 0.5        |

**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| <b>Method ID</b>         | <b>Methodology Summary</b>  |
|--------------------------|---|
| <b>Inorg-018</b>         | Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C.<br><br>NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:-<br><br>TDS = EC * 0.6 |
| <b>Inorg-019</b>         | Suspended Solids - determined gravimetrically by filtration of the sample. The samples are dried at 104+/-5°C.  |
| <b>Inorg-055</b>         | Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.  |
| <b>Inorg-055/062/127</b> | Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.  |
| <b>Inorg-057</b>         | Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.   |
| <b>Inorg-060</b>         | Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.   |
| <b>INORG-119</b>         | Chlorophyll A based on APHA 10200 H latest edition.   |
| <b>Metals-020</b>        | Determination of various metals by ICP-AES.   |
| <b>Metals-021</b>        | Determination of Mercury by Cold Vapour AAS.  |
| <b>Metals-022</b>        | Determination of various metals by ICP-MS.<br><br>Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.   |
| <b>Org-020</b>           | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.  |
| <b>Org-021</b>           | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.   |
| <b>Org-022</b>           | Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.   |
| <b>Org-022/025</b>       | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.  |
| <b>Org-022/025</b>       | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.  |
| <b>Org-023</b>           | Water samples are analysed directly by purge and trap GC-MS.  |
| <b>Org-023</b>           | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.   |



Client Reference: SMC009.50 - Tweed Valley Hospital Project

| QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water |       |     |         |            | Duplicate |            |            | Spike Recovery % |            |      |
|--|-------|-----|---------|------------|-----------|------------|------------|------------------|------------|------|
| Test Description                             | Units | PQL | Method  | Blank      | #         | Base       | Dup.       | RPD              | LCS-W3     | [NT] |
| Date extracted                               | -     |     |         | 18/08/2023 | 2         | 18/08/2023 | 21/08/2023 |                  | 18/08/2023 | [NT] |
| Date analysed                                | -     |     |         | 21/08/2023 | 2         | 21/08/2023 | 22/08/2023 |                  | 21/08/2023 | [NT] |
| TRH C <sub>6</sub> - C <sub>9</sub>          | µg/L  | 10  | Org-023 | <10        | 2         | <10        | <10        | 0                | 100        | [NT] |
| TRH C <sub>6</sub> - C <sub>10</sub>         | µg/L  | 10  | Org-023 | <10        | 2         | <10        | <10        | 0                | 100        | [NT] |
| Benzene                                      | µg/L  | 1   | Org-023 | <1         | 2         | <1         | <1         | 0                | 104        | [NT] |
| Toluene                                      | µg/L  | 1   | Org-023 | <1         | 2         | <1         | <1         | 0                | 101        | [NT] |
| Ethylbenzene                                 | µg/L  | 1   | Org-023 | <1         | 2         | <1         | <1         | 0                | 99         | [NT] |
| m+p-xylene                                   | µg/L  | 2   | Org-023 | <2         | 2         | <2         | <2         | 0                | 98         | [NT] |
| o-xylene                                     | µg/L  | 1   | Org-023 | <1         | 2         | <1         | <1         | 0                | 99         | [NT] |
| Naphthalene                                  | µg/L  | 1   | Org-023 | <1         | 2         | <1         | <1         | 0                | [NT]       | [NT] |
| Surrogate Dibromofluoromethane               | %     |     | Org-023 | 100        | 2         | 100        | 99         | 1                | 101        | [NT] |
| Surrogate toluene-d8                         | %     |     | Org-023 | 100        | 2         | 100        | 95         | 5                | 101        | [NT] |
| Surrogate 4-BFB                              | %     |     | Org-023 | 99         | 2         | 100        | 104        | 4                | 100        | [NT] |

Client Reference: SMC009.50 - Tweed Valley Hospital Project

| QUALITY CONTROL: svTRH (C10-C40) in Water |       |     |         |            | Duplicate |      |      | Spike Recovery % |            |      |
|---|-------|-----|---------|------------|-----------|------|------|------------------|------------|------|
| Test Description                          | Units | PQL | Method  | Blank      | #         | Base | Dup. | RPD              | LCS-W3     | [NT] |
| Date extracted                            | -     |     |         | 17/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 17/08/2023 | [NT] |
| Date analysed                             | -     |     |         | 17/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 17/08/2023 | [NT] |
| TRH C <sub>10</sub> - C <sub>14</sub>     | µg/L  | 50  | Org-020 | <50        | [NT]      | [NT] | [NT] | [NT]             | 86         | [NT] |
| TRH C <sub>15</sub> - C <sub>28</sub>     | µg/L  | 100 | Org-020 | <100       | [NT]      | [NT] | [NT] | [NT]             | 88         | [NT] |
| TRH C <sub>29</sub> - C <sub>36</sub>     | µg/L  | 100 | Org-020 | <100       | [NT]      | [NT] | [NT] | [NT]             | 86         | [NT] |
| TRH >C <sub>10</sub> - C <sub>16</sub>    | µg/L  | 50  | Org-020 | <50        | [NT]      | [NT] | [NT] | [NT]             | 86         | [NT] |
| TRH >C <sub>16</sub> - C <sub>34</sub>    | µg/L  | 100 | Org-020 | <100       | [NT]      | [NT] | [NT] | [NT]             | 88         | [NT] |
| TRH >C <sub>34</sub> - C <sub>40</sub>    | µg/L  | 100 | Org-020 | <100       | [NT]      | [NT] | [NT] | [NT]             | 86         | [NT] |
| Surrogate o-Terphenyl                     | %     |     | Org-020 | 68         | [NT]      | [NT] | [NT] | [NT]             | 64         | [NT] |

**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| QUALITY CONTROL: OCPs in Water - Low Level |       |       |             |            | Duplicate |      |      | Spike Recovery % |            |      |
|--|-------|-------|-------------|------------|-----------|------|------|------------------|------------|------|
| Test Description                           | Units | PQL   | Method      | Blank      | #         | Base | Dup. | RPD              | LCS-W2     | [NT] |
| Date extracted                             | -     |       |             | 17/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 17/08/2023 | [NT] |
| Date analysed                              | -     |       |             | 17/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 17/08/2023 | [NT] |
| alpha-BHC                                  | µg/L  | 0.05  | Org-022/025 | <0.05      | [NT]      | [NT] | [NT] | [NT]             | 100        | [NT] |
| HCB  | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| beta-BHC                                   | µg/L  | 0.05  | Org-022/025 | <0.05      | [NT]      | [NT] | [NT] | [NT]             | 105        | [NT] |
| gamma-BHC                                  | µg/L  | 0.05  | Org-022/025 | <0.05      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Heptachlor                                 | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 100        | [NT] |
| delta-BHC                                  | µg/L  | 0.05  | Org-022/025 | <0.05      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Aldrin                                     | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 97         | [NT] |
| Heptachlor Epoxide                         | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 96         | [NT] |
| gamma-Chlordane                            | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| alpha-Chlordane                            | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Endosulfan I                               | µg/L  | 0.02  | Org-022/025 | <0.02      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| pp-DDE                                     | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 106        | [NT] |
| Dieldrin                                   | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 112        | [NT] |
| Endrin                                     | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 97         | [NT] |
| Endosulfan II                              | µg/L  | 0.02  | Org-022/025 | <0.02      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| pp-DDD                                     | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 93         | [NT] |
| Endrin Aldehyde                            | µg/L  | 0.01  | Org-022/025 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| pp-DDT                                     | µg/L  | 0.006 | Org-022     | <0.006     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Endosulfan Sulphate                        | µg/L  | 0.02  | Org-022/025 | <0.02      | [NT]      | [NT] | [NT] | [NT]             | 105        | [NT] |
| Methoxychlor                               | µg/L  | 0.02  | Org-022/025 | <0.02      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate TCMX                             | %     |       | Org-022/025 | 106        | [NT]      | [NT] | [NT] | [NT]             | 108        | [NT] |

Client Reference: SMC009.50 - Tweed Valley Hospital Project

| QUALITY CONTROL: OP in water LL ANZECCF/ADWG |       |       |         |            | Duplicate |      |      | Spike Recovery % |            |      |
|--|-------|-------|---------|------------|-----------|------|------|------------------|------------|------|
| Test Description                             | Units | PQL   | Method  | Blank      | #         | Base | Dup. | RPD              | LCS-W2     | [NT] |
| Date extracted                               | -     |       |         | 17/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 17/08/2023 | [NT] |
| Date analysed                                | -     |       |         | 18/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 18/08/2023 | [NT] |
| Azinphos-methyl (Guthion)                    | µg/L  | 0.02  | Org-021 | <0.02      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Bromophos ethyl                              | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Chlorpyrifos                                 | µg/L  | 0.009 | Org-021 | <0.009     | [NT]      | [NT] | [NT] | [NT]             | 100        | [NT] |
| Chlorpyrifos-methyl                          | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Diazinon                                     | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Dichlorovos                                  | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Dimethoate                                   | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Ethion                                       | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 98         | [NT] |
| Fenitrothion                                 | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 124        | [NT] |
| Malathion                                    | µg/L  | 0.05  | Org-021 | <0.05      | [NT]      | [NT] | [NT] | [NT]             | 118        | [NT] |
| Ronnel                                       | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | 92         | [NT] |
| Parathion                                    | µg/L  | 0.004 | Org-021 | <0.004     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Coumaphos                                    | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Disulfoton                                   | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Fenamiphos                                   | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Fenthion                                     | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Methodathion                                 | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Mevinphos                                    | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Methyl Parathion                             | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Phorate                                      | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Phosalone                                    | µg/L  | 0.01  | Org-021 | <0.01      | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate TCMX                               | %     |       | Org-021 | 106        | [NT]      | [NT] | [NT] | [NT]             | 108        | [NT] |



**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| QUALITY CONTROL: Miscellaneous Organics - water |       |     |             |            | Duplicate |      |      | Spike Recovery % |            |      |
|---|-------|-----|-------------|------------|-----------|------|------|------------------|------------|------|
| Test Description                                | Units | PQL | Method      | Blank      | #         | Base | Dup. | RPD              | LCS-W2     | [NT] |
| Date prepared                                   | -     |     |             | 17/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 17/08/2023 | [NT] |
| Date analysed                                   | -     |     |             | 18/08/2023 | [NT]      | [NT] | [NT] | [NT]             | 18/08/2023 | [NT] |
| Toxaphene*                                      | µg/L  | 2   | Org-022/025 | <2         | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Demeton-O                                       | µg/L  | 0.2 | Org-022/025 | <0.2       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Demeton-S                                       | µg/L  | 0.2 | Org-022/025 | <0.2       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate p-Terphenyl-d <sub>14</sub>           | %     |     | Org-022/025 | 86         | [NT]      | [NT] | [NT] | [NT]             | 96         | [NT] |

Client Reference: SMC009.50 - Tweed Valley Hospital Project

| QUALITY CONTROL: HM in water - dissolved |       |      |            | Duplicate  |   |            |            | Spike Recovery % |            |            |
|--|-------|------|------------|------------|---|------------|------------|------------------|------------|------------|
| Test Description                         | Units | PQL  | Method     | Blank      | # | Base       | Dup.       | RPD              | LCS-W2     | 330660-2   |
| Date prepared                            | -     |      |            | 18/08/2023 | 1 | 18/08/2023 | 18/08/2023 |                  | 18/08/2023 | 18/08/2023 |
| Date analysed                            | -     |      |            | 18/08/2023 | 1 | 18/08/2023 | 18/08/2023 |                  | 18/08/2023 | 18/08/2023 |
| Aluminium-Dissolved                      | µg/L  | 10   | Metals-022 | <10        | 1 | <10        | <10        | 0                | 98         | 84         |
| Arsenic-Dissolved                        | µg/L  | 1    | Metals-022 | <1         | 1 | <1         | <1         | 0                | 89         | 88         |
| Boron-Dissolved                          | µg/L  | 20   | Metals-022 | <20        | 1 | 200        | 200        | 0                | 99         | 97         |
| Cadmium-Dissolved                        | µg/L  | 0.1  | Metals-022 | <0.1       | 1 | <0.1       | <0.1       | 0                | 92         | 91         |
| Chromium-Dissolved                       | µg/L  | 1    | Metals-022 | <1         | 1 | <1         | <1         | 0                | 96         | 97         |
| Copper-Dissolved                         | µg/L  | 1    | Metals-022 | <1         | 1 | <1         | <1         | 0                | 93         | 93         |
| Cobalt-Dissolved                         | µg/L  | 1    | Metals-022 | <1         | 1 | <1         | <1         | 0                | 93         | 93         |
| Lead-Dissolved                           | µg/L  | 1    | Metals-022 | <1         | 1 | <1         | <1         | 0                | 90         | 87         |
| Manganese-Dissolved                      | µg/L  | 1    | Metals-022 | <1         | 1 | 190        | 200        | 5                | 98         | 93         |
| Mercury-Dissolved                        | µg/L  | 0.05 | Metals-021 | <0.05      | 1 | <0.05      | <0.05      | 0                | 107        | [NT]       |
| Nickel-Dissolved                         | µg/L  | 1    | Metals-022 | <1         | 1 | <1         | <1         | 0                | 94         | 93         |
| Selenium-Dissolved                       | µg/L  | 1    | Metals-022 | <1         | 1 | <1         | <1         | 0                | 89         | 89         |
| Silver-Dissolved                         | µg/L  | 0.05 | Metals-022 | <0.05      | 1 | <0.05      | <0.05      | 0                | 94         | 91         |
| Zinc-Dissolved                           | µg/L  | 1    | Metals-022 | <1         | 1 | 13         | 14         | 7                | 95         | 96         |

**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| QUALITY CONTROL: Metals in Waters - Acid extractable |       |      |            |            |   | Duplicate  |            | Spike Recovery % |            |            |
|--|-------|------|------------|------------|---|------------|------------|------------------|------------|------------|
| Test Description                                     | Units | PQL  | Method     | Blank      | # | Base       | Dup.       | RPD              | LCS-W1     | 330660-2   |
| Date prepared  | -     |      |            | 17/08/2023 | 1 | 17/08/2023 | 17/08/2023 |                  | 17/08/2023 | 17/08/2023 |
| Date analysed  | -     |      |            | 18/08/2023 | 1 | 17/08/2023 | 17/08/2023 |                  | 18/08/2023 | 18/08/2023 |
| Phosphorus - Total                                   | mg/L  | 0.02 | Metals-020 | <0.02      | 1 | <0.02      | <0.02      | 0                | 113        | 93         |

**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| QUALITY CONTROL: Cations in water Dissolved |                        |     |            | Duplicate  |   |            |            | Spike Recovery % |            |            |
|---|------------------------|-----|------------|------------|---|------------|------------|------------------|------------|------------|
| Test Description                            | Units                  | PQL | Method     | Blank      | # | Base       | Dup.       | RPD              | LCS-W1     | 330660-2   |
| Date digested                               | -                      |     |            | 21/08/2023 | 1 | 21/08/2023 | 21/08/2023 |                  | 21/08/2023 | 21/08/2023 |
| Date analysed                               | -                      |     |            | 21/08/2023 | 1 | 21/08/2023 | 21/08/2023 |                  | 21/08/2023 | 21/08/2023 |
| Sodium - Dissolved                          | mg/L                   | 0.5 | Metals-020 | <0.5       | 1 | 85         | 86         | 1                | 95         | 79         |
| Potassium - Dissolved                       | mg/L                   | 0.5 | Metals-020 | <0.5       | 1 | 8.4        | 8.5        | 1                | 99         | 94         |
| Calcium - Dissolved                         | mg/L                   | 0.5 | Metals-020 | <0.5       | 1 | 170        | 170        | 0                | 105        | 100        |
| Magnesium - Dissolved                       | mg/L                   | 0.5 | Metals-020 | <0.5       | 1 | 32         | 33         | 3                | 104        | 100        |
| Hardness                                    | mgCaCO <sub>3</sub> /L | 3   | Metals-020 | [NT]       | 1 | 550        | 550        | 0                | [NT]       | [NT]       |

**Client Reference: SMC009.50 - Tweed Valley Hospital Project**

| QUALITY CONTROL: Miscellaneous Inorganics |                   |       |                   | Duplicate  |   |            |            | Spike Recovery % |            |            |
|---|-------------------|-------|-------------------|------------|---|------------|------------|------------------|------------|------------|
| Test Description                          | Units             | PQL   | Method            | Blank      | # | Base       | Dup.       | RPD              | LCS-1      | 330660-1   |
| Date prepared                             | -                 |       |                   | 16/08/2023 | 1 | 16/08/2023 | 16/08/2023 |                  | 16/08/2023 | 16/08/2023 |
| Date analysed                             | -                 |       |                   | 16/08/2023 | 1 | 16/08/2023 | 16/08/2023 |                  | 16/08/2023 | 16/08/2023 |
| Total Suspended Solids                    | mg/L              | 5     | Inorg-019         | <5         | 1 | <5         | [NT]       |                  | 91         | [NT]       |
| Total Dissolved Solids (grav)             | mg/L              | 5     | Inorg-018         | <5         | 1 | 940        | 950        | 1                | 87         | [NT]       |
| Ammonia as N in water                     | mg/L              | 0.005 | Inorg-057         | <0.005     | 1 | 0.22       | 0.22       | 0                | 88         | [NT]       |
| Chlorophyll a                             | mg/m <sup>3</sup> | 1     | INORG-119         | <1         | 1 | <1         | [NT]       |                  | 83         | [NT]       |
| Phosphate as P in water                   | mg/L              | 0.005 | Inorg-060         | <0.005     | 1 | 0.006      | 0.007      | 15               | 119        | [NT]       |
| Nitrate as N in water                     | mg/L              | 0.005 | Inorg-055         | <0.005     | 1 | 0.31       | 0.30       | 3                | 101        | [NT]       |
| NOx as N in water                         | mg/L              | 0.005 | Inorg-055         | <0.005     | 1 | 0.3        | 0.3        | 0                | 101        | [NT]       |
| Total Nitrogen in water                   | mg/L              | 0.1   | Inorg-055/062/127 | <0.1       | 1 | 0.9        | [NT]       |                  | 100        | 91         |



## Result Definitions

|             |   |
|-------------|---|
| <b>NT</b>   | Not tested                                |
| <b>NA</b>   | Test not required                         |
| <b>INS</b>  | Insufficient sample for this test         |
| <b>PQL</b>  | Practical Quantitation Limit              |
| <b>&lt;</b> | Less than                                 |
| <b>&gt;</b> | Greater than                              |
| <b>RPD</b>  | Relative Percent Difference               |
| <b>LCS</b>  | Laboratory Control Sample                 |
| <b>NS</b>   | Not specified                             |
| <b>NEPM</b> | National Environmental Protection Measure |
| <b>NR</b>   | Not Reported                              |

**Quality Control Definitions**

|  |  |
|--|--|
| <b>Blank</b>   | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.           |
| <b>Duplicate</b>   | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.   |
| <b>Matrix Spike</b>  | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| <b>LCS (Laboratory Control Sample)</b>   | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.                                |
| <b>Surrogate Spike</b>   | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.                          |
| Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.     |  |
| The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016. |  |
| Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2   |  |

**Laboratory Acceptance Criteria**

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

Miscellaneous Organics - water - The recovery of LCS and matrix spike cannot be reported due to the fact they are not in the list of analytes requested. However, the non-reported analytes within the LCS and matrix spike had acceptable recoveries.