

Quarterly Environmental Monitoring Report (QEMR) Q1 2025-2026

Dunmore Recycling & Waste Depot

Project No: ENRS0033

Address: 44 Buckleys Road, Dunmore, NSW, 2529

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www.enrs.com.au



(02) 4448 5490



projects@enrs.com.au

ABN: 68 600 154 596

ENRS

Author and Document Control

Written / Submitted By	Reviewed / Approved By
 Eloise Mounsey (BSc) Environmental Scientist & Consultant e eloise@enrs.com.au t 02 4448 5490 m 0421 255 987	 Taite Beeston (BSc) Geologist & Environmental Consultant SafeWork NSW Asbestos Assessor (LAA001484) e taite@enrs.com.au m 0413 126 557

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Executive Summary

Environment & Natural Resource Solutions (ENRS Pty Ltd) were commissioned as independent environmental consultants by ALS Environmental (Wollongong) on behalf of Shellharbour City Council (SCC) to prepare the Quarterly Environmental Monitoring Report (QEMR) for the Dunmore Recycling and Waste Depot (herein referred to as the Site).

This (QEMR) summarises the results of field testing and laboratory analysis conducted by ALS for the first quarter (Q1) of the 2025-2026 monitoring period. Environmental monitoring is conducted by ALS over four (4) quarterly sampling events which and provides the necessary data assessment and analysis to meet requirements of the Site's Environment Protection Licence/s (EPL's); No.5984.

The Site was established in 1945 and has been managed by Shellharbour City Council (SSC) since 1983. The Site is an active landfill and accepts putrescible and non-putrescible waste within its managed landfill cell. Recycling activities conducted at the site include Resource Recovery Centre, Revolve Centre and Food Organics and garden Organics (FOGO) processing. The Site contains multiple landfill cells consisting of a historic legacy unlined cell and multiple lined cells.

In late 2020 to July 2021 Shellharbour City Council moved away from sole reliance on traditional onsite leachate management techniques through initiating a secondary leachate treatment option in which leachate was transported from site for processing at a contractor facility.

In early 2021 Shellharbour City Council constructed a new Leachate Treatment Plant (LTP) on site, which was commissioned in July/August 2021. The LTP is comprised of three (3) primary biological treatment units, including an anoxic reactor, nitrifying reactor, and sequencing batch reactor. The treated stream meets Sydney Water requirements for discharge into Sydney Water sewer, under a trade waste agreement. On average the LTP discharges 60kL/day of treated water, equating to approximately 22ML of leachate removal from site per annum.

Waste regulation in NSW is administered by the EPA under the Protection of the Environment Operations (POEO) Act (1997); the Waste Avoidance and Resource Recovery Act (2001).

The Site operates under the conditions of two (2) EPLs:

- EPL No. 5984. Landfill activities. Consisting of; extractive activities, waste disposal and composting.
- EPL No. 12903. Resource recovery activities. Consisting of; composting and waste storage within the FOGO Facilities and Resource Recovery Centre. ENRS note that EPL No. 12903 does not specify any monitoring or sampling requirements.

EPL No. 5984 specifies the environmental monitoring requirements of the landfill which includes quarterly sampling and analysis of groundwater, surface water, leachate, landfill gas and depositional dust. A copy of the relevant EPL sections outlining the sampling requirements is provided in Appendix A (EPL No. 5984).

The objectives of this AEMR are to:

- Meet the environmental monitoring requirements of Sites EPLs; No. 5984;
- Assess and analyse the environmental monitoring data for the Site against NSW EPA endorsed criteria;
- Identify trends of the environmental monitoring data over the reporting period;

- Identify any on-site or off-site impacts associated with operation of the Site;
- Advise SCC if the current environmental monitoring program is providing adequate information to identify potential environmental impacts from existing operations (if any) and provide recommendations on improvement to the monitoring program if required; and
- Document monitoring results in a Quarterly Environmental Monitoring Report.

The scope of work for this QEMR comprised the collation, assessment and reporting of Site data made available to ENRS from the monitoring events in regard to the following tasks:

- Review previous reports and document the hydrogeological setting;
- Tabulate results of all monitoring data for water, dust samples and methane gas collected and provided by ALS and landfill gas flare temperatures collected by LGI, as required by the EPLs for the respective reporting period.
- Analysis and interpretation of all monitoring data (water, dust, methane gas, gas flare temperatures);
- Review the quarterly environmental monitoring data and reports from the first quarterly sampling event and compare against data from at least the last three (3) years;
- Identification of any deficiencies in environmental performance identified by the monitoring data, trends or environmental incidents, and identification of remedial actions taken or proposed to be taken to address these deficiencies; and
- Recommendations on improving the environmental performance of the facility including improvement to the monitoring program.

Based on the findings obtained during this quarterly monitoring program the following conclusions and recommendations are provided:

- Shallow groundwater flow is expected to mimic topography with low hydraulic gradients flowing towards the south and southeast towards Rocklow Creek. Depth to groundwater was <5mBGL. The nearest sensitive receptors are likely to include; recreational users of the Minnamurra River estuary environs; down gradient stakeholders; and downgradient alluvial aquifers, swamps, Rocklow Creek, Minnamurra River and Groundwater Dependent Ecosystems near discharge zones;
- Groundwater throughout the quarterly monitoring period reported exceedances above the assessment criteria for; ammonia, heavy metals and nitrate within groundwater wells across the Site. The analytes were key indicators of leachate. The exceedances were within range of historical values with no significant changes in concentrations;
- Offsite sample locations within Rocklow Creek generally reported concentrations of analytes below the SAC. However, concentrations of ammonia were generally reported slightly above the ecological stressor value;
- Surface gas methane monitoring of the landfill cap reported satisfactory results all within the adopted assessment criteria;
- Methane levels of enclosed structures on or within 250m of deposited waste or leachate storage were tested and found to be below the acceptable threshold for 1% (volume/volume) in all cases;
- Dust deposition gauges recorded satisfactory results below the guidelines provided in AS3580.10.1. Monitoring should continue in accordance with EPL 5984 requirements;
- Gas Flare temperatures were reported below the required KPI of 760 degrees Celsius;

- Based on the data reviewed for the quarterly monitoring period, contaminants associated with the landfill cell, leachate dam/s and general site uses were present within groundwater and consistent with the historical data;
- Should any change in Site conditions or incident occur which causes a potential environmental impact, a suitable environmental professional should be engaged to further assess the Site and consider requirements for any additional monitoring; and
- This report must be read in conjunction with the attached Statement of Limitations.

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1 Introduction

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1.1 Project Background

1.1.1 Site History

The Site was established in 1945 and has been managed by Shellharbour City Council (SSC) since 1983. The Site is an active landfill and accepts putrescible and non-putrescible waste within its managed landfill cell. Recycling activities conducted at the site include Resource Recovery Centre, Revolve Centre and Food Organics and garden Organics (FOGO) processing. The Site contains multiple landfill cells consisting of a historic legacy unlined cell and multiple lined cells.

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1.2 EPL Requirements

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1.3 Objectives

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1.4 Scope of Work

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- Recommendations on improving the environmental performance of the facility including improvement to the monitoring program.

2 Site Identification

2.1 Site Identification

The Site is located at 44 Buckleys Road, Dunmore, NSW, 2529, legally defined as Lot 21 in Deposited Plan 653009 and Lot 1 Deposited Plan 419907. The Site is situated approximately three and a half (3.5) kilometres southwest of the Shellharbour town centre. The area's regional location is defined in **Figure 2-1** below. Details of the Site boundary and sampling points are provided in the Site Plan as **Figure 14-1**. The key features required to identify the Site are summarised in **Table 2-1**.

Table 2-1: Site Identification

Site	Description
Site name	Dunmore Recycling and Waste Depot
Street address	44 Buckleys Road, Dunmore, NSW 2529
Property description	-
(Lot / Deposited Plan)	21 / 653009 and 1 / 419907
Easting/Northing (GDA2020) (approximate centre of Site)	Zone 56H Easting: 302280 Northing: 6168169 (Approximate centre of Site)
Current owners	Shellharbour City Council
Current occupiers	Shellharbour City Council
Site area (total)	54.78 hectares
Site dimensions	Irregular shaped boundary. Please refer to Figure 14-1 .
Areas excluded or inaccessible	Assessment was limited to the available data for the sample points listed in the EPL.
Local government area	Shellharbour City Council
Current zoning	RU1 Primary Production
Locality map	Albion Park 9028
Trigger for assessment	Reporting requirements of EPL 5984.
State or Local government statutory controls	<ul style="list-style-type: none"> • EPL 5984; • Contaminated Land Management Act 1997; • Environment Protection Act 1997; • Waste Avoidance and Resource Recovery Act (2001). • Work Health and Safety Act 2011; and • Work Health and Safety Regulations 2011.
Legal permissions to access the Site obtained or required	N/A. ENRS did not access the Site.
Consent of adjoining landowners and/or occupiers to access land (if required)	N/A. Not required for this scope of work.

Figure 2-1 Project Location



Source: Nearmap.com.au (cited 16/01/2026)

2.2 Surrounding Land Use

The current activities and operations on adjacent properties and the surrounding area include:

Table 2-2: Summary of surrounding land use

Direction	Land Use
North	Buckleys Road, commercial infrastructure and open grassland. Residential dwellings along the northwest border of the Site. Golf course further to the northeast.
East	Dunmore Resources and Recycling facility immediately to the east, bushland to the southeast.
South	Bushland, Rocklow Creek (300m from landfill activities). Further to Kiama Community Recycling Centre and Riverside Drive.
West	Bushland to the southwest, scattered trees immediately to the west and further to the Princes Highway. Boral Quarries complex beyond the Highway. Residential dwellings to the Northwest.

2.2.1 Sensitive Receptors

The nearest sensitive receptors are likely to include:

- Recreational users of the Minnamurra River estuary environs;
- Neighbouring and down gradient stakeholders;
- Ecological receptors - flora and fauna.
- Shallow soil, groundwater and stormwater – vertical and lateral migration of contaminants (if any) and connectivity with shallow groundwater, drainage waterways and nearby tributaries; and
- Down gradient alluvial aquifers, swamps, Rocklow Creek, Minnamurra River and Groundwater Dependent Ecosystems (GDE) near discharge zones.

2.3 Topography

A review of the current series Albion Park (90281N) 1:25,000 topographic map sheet was conducted to assess the regional topography and to identify potential runoff and groundwater controls in the region. Topography provides a useful indicator for groundwater controls including gradient and flow path.

The Site presents low topographic relief, remaining between approximately 3-5 mAHD across the entirety of the Site. The regional topographic gradient trends south-southeast towards Rocklow Creek and Minnamurra River.

2.4 Soil Landscape

Review of the Sites soil landscape was conducted with reference to the Kiama 1:100,000 soil landscape map. The Site was mapped as underlain by the Mangrove Creek Estuarine (mc) organic, black, massive sandy loam topsoil overlying loose bleached light grey sand with iron staining in the subsoil.

Landscape – vegetated tidal flats in estuarine areas on Holocene sediments. Relief <3 m. Slopes <3%. Mangrove open-scrub, saltmarsh herbland, sedgeland and low open-forest

Soils - deep (>150 cm) Siliceous Sands (Uc1.21) and Calcareous Sands (Uc1.11) and Solonchaks (Uc1.11) occur on mangrove flats. Humic Gley Soils (Uc4.53) and Solonchaks (Uc1.11) occur on saltmarshes.

Review of the online *Shellharbour City Council* Acid Sulphate Soil Risk Map indicates that the Site lies within a **Class 3** area, suggesting that works beyond 1 metre below the ground level (mbGL) have the potential to encounter Acid Sulphate Soils.

2.5 Geology

A review of the Site geology was undertaken with reference to the Wollongong 1:250,000 geological series sheet (Si56.9) and the Shellharbour-Kiama area coastal quaternary 1:50,000 geology sheet (See Figure 4). The Site is predominately underlain by the Quaternary alluvial deposits (Qal) characterised as Holocene backbarrier flat; marine sand, silt, clay, gravel and shell (Qhbf). The northern most corner of the site is intersected by the Gerringong Volcanics (Pbb) characterised by Latite. Based on the mapped geology, previous investigations and borehole logs, the Site infrastructure including the landfill cell is located within the alluvial deposits.

2.6 Hydrogeology

Groundwater resources in the area are expected to be associated with Shallow unconfined alluvial and unconsolidated systems, generally less than 20 m in depth with moderate to high transmissivity, variable water quality, and strongly controlled by rainfall recharge.

2.6.1 Existing Bores

A network of groundwater monitoring bores is installed at the Site to provide specific data on the quality and nature of groundwater. Given the spatial distribution of the bores and disturbed ground condition expected within the land fill cell, groundwater contours could not be accurately mapped.

A review of the NSW Office of Water (NOW) existing bore records was conducted to develop the conceptual understanding of regional groundwater conditions, including aquifer depths, yields, water quality, and distribution. A search of the Bureau of Meteorology Australian Groundwater Explorer groundwater database identified a total of eighty-eight (88) registered bores within one and a half (1.5) kilometres of the Site (see Figure 5). Registered bores in the area are predominantly associated with the Landfill Site and with the quarry complex (Boral Site) to the west of the EPL Site. The majority of bores are registered for monitoring purposes, excluding a single well (GW044447), which is registered for stock and domestic purposes. The stock bore is located approximately one (1) kilometre to the north of the Site, on the western side of the Princes Highway, which is considered to be up gradient of the Site and not in direct hydraulic connectivity. Registered bore depths are between 1.25 m and 22 m. Bore records indicate shallow unconsolidated aquifer systems.

2.6.2 Flow Regime

Previous reports (Environmental Earth Sciences, 2018) have identified that groundwater flows vary across the Site, but the general trend is south, towards Rocklow Creek.

Based on the unconfined nature of the aquifers, the shallow groundwater flow is inferred to mimic topography with low to moderate hydraulic gradients flowing towards the south.

The Site and adjoining land, was largely unsealed with potential for local recharge from rainfall infiltration. Likely discharge areas are predominantly to the south and east of the Site including swamps and Rocklow Creek. The waterbodies surrounding the Site are recognised as State Environmental Planning Policy No.14 (SEPP14) registered wetlands and Proximity Areas for Coastal Wetlands border the eastern, southern and western boundaries of the Site.

2.7 Surface Water

The Site topography indicates that surface water flow will generally trend to the east towards off Site wetlands and southeast towards Rocklow Creek. These present the primary regional drainage structures for natural surface water and runoff. A series of stormwater infrastructure is present at the Site which is expected to capture run off. Infrastructure includes but not limited to; stormwater drains; sedimentation ponds; levee banks; collection and diversion drains; and leachate dams.

3 Assessment Criteria

ENRS have adopted the most appropriate criteria in accordance with current state and national guidelines. Where available, Australian and NSW EPA endorsed guidelines have been referenced in preference to international standards.

3.1 Water Quality Guidelines

Nationally developed guidelines are provided in the National Water Quality Management Strategy (NWQMS): Guidelines for Groundwater Protection in Australia (ARMCANZ & ANZECC;2013). The relevant criteria to protect environmental values are provided in **Table 3-1**:

Table 3-1: Water Quality Assessment Criteria

Environmental Value	Relevant Guideline
Ecosystems / Health Screening Levels	<ul style="list-style-type: none"> • ANZG (2018) (Australian and New Zealand Guidelines for Fresh and Marine Water Quality); • ASC NEPM (2013); and • Health Screening Levels for Petroleum Hydrocarbons in Soil & Groundwater (CRC CARE, Sept. 2011)
Drinking Water	<ul style="list-style-type: none"> • Australian Drinking Water Guidelines (ADWG)

3.1 Groundwater & Surface water Assessment Criteria

The ANZG (2018) provide [default guideline values](#) (DGVs) for four (4) levels of protection categorised by the percent of species possibly affected, being 80%, 90%, 95% or 99% of species. Where DGVs are not available reference is made against the ANZECC (2000) Trigger Values (TV). The NSW Office of Water (DECCW;2007) endorsed groundwater management guidelines recommend assessment for aquatic ecosystems based on the 95 per cent of species level of protection. This assessment has adopted the assessment criteria considered most appropriate for the contaminants of concern based on the Site's EPL and results provided by ALS. The adopted TV for the Site Assessment Criteria (SAC) are summarised in **Table 3-2** below.

Table 3-2: Groundwater & Surface Water Assessment Criteria

Analyte	Units	Fresh Water ^A	Marine Water ^A	Drinking Water ^B	
				Health	Aesthetic
Chloride	mg/L	-	-	-	250
Calcium	mg/L	-	-	-	-
Magnesium	mg/L	-	-	-	-
Sodium	mg/L	-	-	-	180
Potassium	mg/L	-	-	-	-
Manganese	mg/L	1.9	-	0.5	0.1
Total iron	mg/L	-	-	-	0.3
Dissolved iron	mg/L	-	-	-	0.3
Fluoride	mg/L	-	-	1.5	-
Ammonia as N ^C	mg/L	0.91 (pH 8)	0.91 (pH 8)	-	0.5
Nitrate as N	mg/L	0.7	-	50	-
Nitrite as N	mg/L	-	-	3	-
Total Organic Carbon	mg/L	-	-	-	-
Bicarbonate alkalinity as CaCO ₃	mg/L	-	-	-	-
Total alkalinity as CaCO ₃	mg/L	-	-	-	-
Sulfate as SO ₄ - turbidimetric	mg/L	-	-	-	250
Dissolved Oxygen - % Saturation (surface water only)	%	85-110%	-	-	-
Suspended Solids (SS) (surface water only)	mg/L	-	-	-	-
Turbidity (surface water only)	NTU	-	-	-	5
pH	pH	6.5-8.5	-	6.5-8.5	6.5-8.5
Electrical Conductivity	µS/cm	2200	-	-	-

Table notes:

Criteria is only provided for the analytes test by ALS and listed within EPL 5984.

A: Investigation levels apply to typical slightly-moderately disturbed systems. See ANZECC & ARMCANZ (2000) for guidance on applying these levels to different ecosystem conditions.

B: Investigation levels are taken from the health values of the Australian Drinking Water Guidelines (NHMRC 2011).

D. Criteria for ammonia. See Section 3.1.1:

3.1.1 Ammonia Assessment criteria

In addition to the default TV of 0.91mg/L (pH 8) for ammonia, Table 3.3.2 of the ANZECC (2000) also provides stressor values for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems. The table provides a stressor guideline for ammonia of **0.2mg/L** at pH 8 for lowland rivers. For the purposes of this assessment, the value has been applied to all water samples, excluding the leachate tank.

pH specific ammonia TVs. Additional sample point specific pH dependant trigger values for total ammonia were also adopted when a sample was outside of 8 pH units. Sample specific values were

based on Table 8.3.7 of the ANZECC (2000). The additional criteria and results are presented in Table 14-2 attached.

3.2 Dust Deposition Assessment Criteria

Criteria for collection and assessment of dust deposition concentrations are provided within the Australian standard AS3580.10.1 - Methods for sampling and analysis of ambient air; method 10.1- Determination of particulate matter - Deposited matter - Gravimetric method. AS3580.10.1 provides an acceptable level of 4 g/m²/month.

3.3 Surface Methane Gas Assessment Criteria

The NSW EPA Solid Waste Landfill Guidelines 2nd Edition (2016) provides sampling methodologies and threshold for surface methane gas concentrations at landfill sites. The acceptable threshold for capped landfills is 500 parts per million (ppm) at 5 cm above the capping surface.

3.4 Gas Accumulation Assessment Criteria within Enclosed Structures

The NSW EPA Solid Waste Landfill Guidelines 2nd Edition (2016) provides sampling methodologies and threshold gas levels to ensure that gas is not accumulating within enclosed structures on or within 250m of deposited waste or leachate storage. The acceptable threshold for 1% (volume/volume).

4 Data Quality Objectives (DQO)

If sampling is conducted, Data Quality Objectives (DQO) are required to define the quality and quantity of data needed to support management decisions. The process for establishing DQO's is documented in the National Environment Protection (Assessment of Site Contamination) Measure (NEPC;2013).

4.1 Step 1: State the problem

The Site is currently operating as an active landfill and requires regular environmental monitoring in accordance with the EPL 5984.

4.2 Step 2: Identify the decision/goal of the study

The primary goals / objectives of the investigation program were to:

- Meet the environmental monitoring requirements of Sites EPLs; No. 5984 and 12903;
- Assess and analyse the environmental monitoring data for the Site against NSW EPA endorsed criteria;
- Identify trends of the environmental monitoring data over the reporting period;
- Identify any on-site or off-site impacts associated with operation of the Site;
- Advise SCC if the current environmental monitoring program is providing adequate information to identify potential environmental impacts from existing operations (if any) and provide recommendations on improvement to the monitoring program if required; and
- Document monitoring results in a Quarterly Environmental Monitoring Report.

4.3 Step 3: Identify the information inputs

The provided results shall be used to identify any risks to the sensitive receptors or change in site conditions. The following inputs were required:

- Representative environmental samples;
- Measurements of environmental parameters;
- Comparison of the parameter results against the adopted Site Assessment Criteria (SAC);
- The completion of an Quarterly Environmental Monitoring Report.

4.4 Step 4: Define the study boundaries

The assessment was limited to sampling locations listed in EPL 5984. As listed in Appendix A and depicted in Figure 14-1 - Figure 14-2.

4.5 Step 5: Develop the analytical approach (decision rule)

The site information and results obtained from this assessment scope will be compared against the NSW EPA endorsed SAC documented in **Section 3** with considerations of the land use and nearby receptors. The decision rule process is defined by the following:

- QA/QC indicate the results are reliable;
- Laboratory Practical Quantitation Limits (PQL) or Limits of Reporting (LOR) are less than the SAC; and
- Results meet the adopted SAC and/or are within background levels and regulatory criteria.

4.6 Step 6: Specify performance or acceptance criteria

To ensure the quality of the environmental data collected during the assessment, detailed quality assurance and quality control (QA/QC) measures will be applied by ALS. The QA/QC measures will be followed from the inception of the project, during field sampling, laboratory analysis of samples and data reporting. The QAQC measures understood to have been adopted by ALS are documented in detail below within **Table 5-1**.

4.7 Step 7: Develop the plan for obtaining data

The seventh and final step involves identifying the most effective sampling and analysis design for generating the data that is required to satisfy the data quality objectives. The required sampling program is based on and accounts for the following key points:

- Requirements of Sites EPLs; No. 5984 and 12903;
- The results will be compared against the adopted SAC for the proposed land use.

The indicators (DQI) used to identify that data obtained and provided by ALS has been done so in a way which meets project data quality objectives (DQO) summarised below.

Table 4-1: Summary of Data Quality Objectives (DQO)

DQO	Evaluation Criteria
Documentation completeness	<ul style="list-style-type: none"> • Completion of field records, chain of custody documentation, laboratory test certificates from NATA-accredited laboratories.

DQO	Evaluation Criteria
Data comparability	<ul style="list-style-type: none"> • Use of appropriate techniques for the sampling, storage and transportation of samples. Use of NATA accredited laboratory using NEPM endorsed procedures.
Data representativeness	<ul style="list-style-type: none"> • Adequate sampling coverage of all required EPL sample points.
Precision and accuracy for sampling and analysis	<ul style="list-style-type: none"> • Use properly trained and qualified field personnel and achieve laboratory QC criteria. • Blind field duplicates to be collected at a minimum rate of 1 in 20 samples. • RPD's to be less than 30% for inorganic and 50% for organic analyses. • Rinsate samples not considered necessary as all PCoC measured by the lab were assumed to be present at the site. • Disposable single use items used for the collection of samples.

5 Sampling Methodology

Field sampling was conducted by ALS Environmental (Wollongong) as commissioned by SCC on quarterly basis. ENRS understands that sampling was conducted in accordance with ALS sampling protocols with reference to current industry standards and Code of Practices. The following sub-sections provide a summary of the sampling methodologies.

Monitoring frequency is defined by the EPL's and is designed to capture necessary site data to support assessment of Site conditions (quarterly and annual), any long-term trends or overflow events. Monitoring is conducted quarterly and annually for selected analytes with additional overflow and event-based sampling triggered by Site conditions.

5.1 Water Sampling

5.1.1 Location of Water Monitoring Points

Groundwater and surface water monitoring requirements are defined by the EPL No. 5984, as provided in Appendix A. The water sampling regime includes; five (5) surface waters, one (1) located onsite and four (4) located off-site; twelve (12) groundwater monitoring wells surrounding the landfill operations; and one (1) leachate point. Sampling locations are illustrated in Figure 2 attached.

5.1.2 Depth to Water

Prior to sampling, the depth to the groundwater table was measured from the top of casing (TOC) using a water dipper and clear disposable bailer. The bores were inspected for the presence of hydrocarbon and the thickness of any LNAPL was measured visually in clear disposable bailers. No LNAPL was reported on field sheets provided by ALS.

5.1.3 Sample Collection

Sampling is conducted independently by ALS Environmental under contract with SCC. Chain of Custody records and field sheets are provided in Appendix D. ENRS understand sampling was conducted in accordance with ALS sampling protocols.

5.1.4 Groundwater Sampling

Groundwater wells were sampled in order of distance from any areas of known contamination to ensure that lower contaminated wells are sampled before likely higher contaminated wells. Groundwater bores were purged prior to sampling by removing at least three (3) well volumes with samples being collected using clear disposal bailers or low flow parameter stabilisation methods applied with field sheets provided to document pumping volumes and field parameters. Post sampling all samples were sealed in laboratory-prepared sampling containers appropriate for the analysis.

Surface water samples were collected as 'grab samples' from the midpoint of the source at mid-depth.

Post flushing, leachate samples were sampled from a tap on the discharge line directly into purpose specific, pre preserved sample containers.

All samples were stored on ice immediately after their collection and transported to the laboratory under Chain of Custody (CoC) documentation.

Any loss of volatile compounds was kept to a minimum by employing the following sampling techniques:

- Minimal practical disturbance during sampling;
- Samples placed in sample containers as soon as possible;
- Sample containers contain zero headspace;
- Samples placed directly on ice and transported to the laboratory as soon as possible; and
- Employing the most appropriate analytical method to minimise volatile losses at the laboratory.

5.1.5 Field Testing

Field testing was conducted during bore purging and sampling to record physical water parameters. A multi-probe water quality meter was used to measure the following parameters:

- Oxygen Reduction Potential (ORP, representing redox).
- Electrical Conductivity (Salinity - EC);
- Temperature; and
- pH (Acidity).

5.2 Dust Deposition Sampling

Measurement of dust deposition was carried out in accordance with the Australian Standard AS3580.10.1 (2016). This Australian Standard provides a mean of determining the mean surface concentration of deposited matter from the atmosphere.

Dust collection gauges were set up for a one (1) month periods at during each quarterly sampling event. A total of four (4) dust monitoring locations were considered adequate to assess site conditions.

5.3 Surface Methane Gas Monitoring

The concentration of methane gas (in units of ppm) at the Site was carried out in accordance with EPA Guidelines Solid Waste Landfill 2nd Edition 2016. On the day of sampling the wind speed was

below 10 km/hr. Testing was conducted using a calibrated LaserOne portable gas monitor specifically designed for landfill gas monitoring. A calibration Certificate is provided in Appendix F.

One field technician commenced data collection along transect lines in a grid pattern across the landfill surface at 25-metre spacings. A site plan depicting the sampled transect line is provide in Figure 3. Transects were recorded using a Magellan SporTrak GPS. The concentration of methane gas was measured at a height of 5 cm above the ground in areas with intermediate or final cover over the emplaced waste.

5.4 Gas Accumulation Monitoring in Enclosed Structures

The concentration of methane gas (in units of percent volume/volume) inside all enclosed structures within 250m of emplaced waste or leachate storage facility at the Site was carried out in accordance with EPA Guidelines Solid Waste Landfill 2nd Edition 2016. On the day of sampling testing was conducted using a calibrated LaserOne portable gas monitor specifically designed for landfill gas monitoring. A calibration Certificate is provided in Appendix F.

The internal methane concentrations for each enclosed structure were recorded by a field technician. A site plan depicting the location onsite of each structure provided in Figure 3. Any depressions or surface fissures away from the sampling grid were also investigated.

5.5 Laboratory Analysis

ALS, a NATA accredited laboratory, was contracted by SCC to undertake the sample analysis in accordance with current standards. Laboratory QA/QC results are detailed in the Laboratory reports contained in the appendices section of this report.

5.6 Flare Monitoring

Landfill gases (LFG) are formed through bacterial action on emplaced waste and are a normal by-product of Landfilling operations. Landfill gas is a mixture of many different gases, typically its major components include methane and carbon dioxide. Smaller concentrations of nitrogen, oxygen, ammonia, sulphides, hydrogen, carbon monoxide, and nonmethane organic compounds (NMOCs) and Volatile Organic Compounds (VOC's) may also be present.

When operated efficiently the use of a gas flare to burn landfill gas can significantly reduce emissions of methane, NMOCs and VOC's.

The flare was monitored, maintained and operated by LGI LTD. Copies of LFG reports for the relevant reporting period are included as Appendix G.

5.7 QAQC

The Quality Assurance and Quality Control (QA/QC) protocols for the sample program conducted by ALS are summarised in **Table 5-1**.

Table 5-1: Summary of QAQC for Sample Program

Protocol	Description
Sampling Team	Site personnel comprised only experienced and qualified environmental professionals trained in conducting site contamination investigations.

Protocol	Description
Sample Method	Samples obtained in laboratory prepared containers with preservatives appropriate for the required analysis.
Calibration	Equipment calibration certificates for each sampling event.
Sample Equipment	All sample equipment disposed or decontaminated between sample sites.
Field Screening	Visual and manual inspection of sample materials for potential contamination recorded on field sheets.
Chain of Custody Forms	All samples logged and transferred under appropriately completed Chain of Custody (COC) forms with Sample Receipts issued by the laboratory.
Blind Field Duplicate	At least one (1) blind field duplicate collected per 20 samples and submitted for analysis accompanied by COC forms.

6 Water Quality Results

Laboratory results for groundwater and surface water were provided to ENRS for tabulation and comparison with relevant EPL assessment criteria. A summary of results is provided in Table 14-1 and Table 14-2 with comparison against the relevant Site Assessment Criteria (SAC). The laboratory certificates of analysis are provided in Appendix B, Appendix C, Appendix D and Appendix E.

6.1 Overflow Results

ENRS understands that no overflow events occurred during the Q1 monitoring period at the overflow point SWP1 (EPA Point 1).

6.2 Physical Indicators

6.2.1 Groundwater Depth

The measured depth to groundwater remained relatively consistent with a low degree of variance in comparison to the historical data. The Site was characterised by a shallow water table of less than 5.0 mBGL. The depth to water was measured between:

- Quarter 1 December 2025: 0.80 mbgl (BH15) and 4.85 mbgl (BH14).

6.2.2 Salinity

Salinity is reported by the laboratory as either Electrical Conductivity (EC) or Total Dissolved Solids (TDS). The ANZECC guidelines document a conversion ratio of $0.68 \text{ mg/L} = 0.68 \text{ EC } (\mu\text{S/cm})$. Table 3.3.3 of the ANZECC (2000) guidelines document default TV for EC in lowland freshwater rivers between $125 \mu\text{S/cm} - 2,200 \mu\text{S/cm}$ ($\sim 1,500 \text{ mg/L}$). Marine waters may be characterised by an EC between $35,000 \mu\text{S/cm} - 50,000 \mu\text{S/cm}$.

Groundwater

During the monitoring period, salinity in groundwater samples was generally characterised by freshwater EC values in the upgradient northern portions of the Sites, tending to become more saline

towards Rocklow Creek, being a tidal river system. Results for groundwater were reported between 324 $\mu\text{S/cm}$ (BH18) and 6,860 $\mu\text{S/cm}$ (BH1c). The results were all considered to be in range of historical values.

Surface Waters

Surface water samples collected from Rocklow Creek reported EC values between 35,000 $\mu\text{S/cm}$ (SWC_2) and 43,800 $\mu\text{S/cm}$ (SWC_Down_2). EC values were consistent with the saline conditions of a tidal river system and may fluctuate due to Rocklow Creek being a tidal system.

Result for onsite surface water location SWP1 was reported at 1,180 $\mu\text{S/cm}$, which was below the TV and consistent with historical data.

6.2.3 Dissolved Oxygen

Levels of Dissolved Oxygen (DO) were measured in the field for surface waters only. DO reflects the equilibrium between oxygen-consuming processes and oxygen-releasing processes. DO can initiate redox reactions resulting in the uptake or release of nutrients. Low DO concentrations can result in adverse effects on many aquatic organisms which depend on oxygen for their efficient metabolism. At reduced DO concentrations many compounds become increasingly toxic, for example Zinc, Lead, Copper, phenols, cyanide, hydrogen sulphide and Ammonia.

The ANZG (2018) guidelines Table 3.3.2 outlines a range between 85% to 110% saturation for low land rivers. Assuming a water temperature of 18°C this is equivalent to approximately 7-11 mg/L or ppm. DO is reported by the laboratory in mg/L and converted to a percentage.

Surface Waters

Dissolved Oxygen within onsite surface water dam SWP-1 was 2.62 mg/L or 27.8%. The results were outside of the TV and consistent with historical data.

Results for DO at offsite surface water locations within Rocklow Creek ranged from 5.10 mg/L or 66.7% (SWC_2) to 5.83 mg/L or 77.5% (SWC_down). The results were generally consistent with the historical data.

Leachate

Dissolved oxygen within leachate tank LP1 was 7.17 mg/L or 90.5%. Results were within range of the historical data.

6.2.4 pH

pH is a measure of hydrogen activity. pH determines the balance between positive hydrogen ions (H^+) and negative hydroxyl ions (OH^-) and provides a test of water acidity (low pH) or alkalinity (high pH). Most natural freshwaters have a pH in the range 6.5 to 8.0. Changes in pH may affect the physiological functioning of biota and affect the toxicity of contaminants. Both increases and decreases in pH can result in adverse effects, although decreases are likely to cause more significant problems. Low pH indicates acidic conditions which may increase the mobility of heavy metals, whilst high pH indicates alkaline conditions which may also generate Ammonia. Previous investigations of other regional Landfill Sites in the Illawarra-Shoalhaven (Forbes Rigby;1996) report regionally acidic groundwater with low readings in the range of 4.3 pH associated with silica saturation and oxidation of accessory marcasite grains (iron sulphide).

Groundwater

Results for pH in groundwater were reported between 6.8 (BH18 and BH12r) and 7.4 (BH19R). The results were relatively neutral and within the SAC. No exceedances were recorded, and the results were considered satisfactory and within range of historical data.

Surface Water

Results for pH at all surface water monitoring points of Rocklow Creek reported neutral conditions between 7.4 (SWC_UP) and 7.5 (SWC_DOWN, SWC_DOWN_2, SWC_2,). The pH of SWP-1 onsite surface water location was 7.4. All results were within the SAC and range of historical values.

Leachate

The pH of leachate tank LP1 was slightly elevated at 8.1 which was within the range of historical values.

6.2.5 Total Suspended Solids (TSS)

TSS was measured for surface water sample points only. TSS provides a measure of turbidity reported as the mass of fine inorganic particles suspended in the water. Measurement of TSS provides a valuable indication of the sediment and potential nutrient load. Elevated TSS decreases light penetration whilst phosphorus is absorbed onto sediment surfaces.

Results for TSS at all monitoring points of Rocklow Creek were reported below the LOR of 5 mg/L. This was considered to be satisfactory.

TSS recorded in onsite water dam SWP1 was 6 mg/L.

6.3 Inorganic Analytes

Inorganic analytes are measured to detect potential landfill leachate migration via groundwater to nearby surface waters. Given these constituents are mobile and persistent, they can cause ecological harm to sensitive aquatic receptors. Water samples were analysed for select nutrients including Ammonia, Ammonium, Nitrate and Nitrite. The most bio-available forms of Nitrogen are Ammonium (NH₄⁺) and Nitrate (NO₃⁻). Ammonia is an oxygen-consuming compound and is toxic to aquatic biota at elevated concentrations. Ammonia toxicity increases under low oxygen levels and higher pH.

6.3.1 Ammonia

Groundwater

Results for ammonia in groundwater were reported in exceedance of all the SAC (ESLs of 0.2 mg/L, 0.91 mg/L and pH modified TV's) in all sample locations. Results were considered to be significantly above the SAC and within range of the previous values. A table outlining the ammonia results is provided in Table 14-2 attached.

Surface Water

Ammonia in onsite surface water dam SWP-1 was reported at 0.13 mg/L which was below the minimum SAC of 0.2 mg/L and the 95% TV.

Ammonia concentrations in Rocklow Creek were reported at 0.05 mg/L (SWC_DOWN_2) , 0.07 mg/L (SWC_down). and 0.08 mg/L (SWC_2, SWC_Up). No results in Rocklow Creek were above the ecological stressor value or 0.2 mg/L. The results were below the 95% trigger values.

Leachate

Ammonia in leachate tank LP1 was 0.43 mg/L. The result was low in comparison to previous sampling events.

6.3.2 Nitrate

Groundwater

Results for Nitrate in groundwater samples reported a mix of satisfactory results and exceedances above the SAC was in line with historical data. Three (3) exceedances were reported above the SAC of 0.7mg/L in BH14 2.03 mg/L, BH13 4.25 mg/L, and BH3 3.25mg/L.. All other monitoring wells reported satisfactory results.

Surface Water

Nitrate in onsite surface water dam SWP-1 was reported at 0.01 mg/L which is below the SAC.

Nitrate concentrations for all off-site surface water samples in Rocklow Creek were reported below the SAC and were considered satisfactory.

Leachate

The nitrate concentration in leachate tank LP1 was 753 mg/L. Increased concentrations of nitrate may be a characteristic of untreated leachate. ENRS notes that leachate is collected in above ground tanks, treated and then disposed of.

6.3.3 Nitrite

Results for nitrite in all groundwater, surface water and Leachate Tank LP1 were all reported below the SAC. The results were reported within range of historical values

6.4 Anions

Anions such as chloride, sulfate, and fluoride may be used as tracers of leachate that can indicate the presence and migration of leachate, helping to distinguish landfill-derived contamination from natural groundwater chemistry.

6.4.1 Chloride

Ground Water

The results for chloride in groundwater varied across the Site. Elevated chloride results were measured within Rocklow Creek which may be characteristic of a marine tidal river system. In comparison, upgradient groundwater results reported slightly lower chloride concentrations. Results for chloride within groundwater monitoring wells were reported between 12mg/L (BH18) and 865 mg/L (BH1C).

Surface Water

Onsite surface water dam SWP1 reported concentrations of chloride of 127 mg/L. Off-site creek surface water results ranged from 17,300 mg/L (SWC_Down_2) to 15,600 mg/L (SWC_UP). Off-site concentrations may be a characteristic of a tidal marine environment.

Leachate

Chloride within Leachate Tank LP1 was 128 mg/L.

6.4.2 Fluoride

The results for fluoride in groundwater, surface water and leachate tank were all reported below the SAC and were generally consistent with the historical data.

6.4.3 Sulphate

Results for sulphate in groundwater generally reported satisfactory results that were in range of the historical data. Higher sulphate results were reported in Rocklow Creek, which may be characteristic of a marine tidal river system.

6.4.4 Total Alkalinity

6.4.5 Total and Bicarbonate Alkalinity

Alkalinity is a measure of the ability of water to neutralize acids, specifically related to the presence of bicarbonate ions (HCO_3^-). At a landfill, groundwater can be affected by various contaminants from decomposing waste, and the bicarbonate alkalinity plays an important role in mitigating some of the environmental impacts. Bicarbonate alkalinity acts as a buffer to maintain the pH of water. Typical bicarbonate alkalinity levels in freshwater range from 20 to 200 mg/L and marine water of 1200 to 2500 mg/L.

Total and bicarbonate alkalinity in groundwater results ranged between 166 mg/L (BH18) and 2,530 mg/L (BH1C) which were all considered within range.

Surface waters were consistent with historical data and within the normal expected range.

6.5 Metals

Metals are monitored to measure leachate-derived contamination that may be mobilised under geochemical conditions caused by a landfill, and transported via groundwater to nearby waterways, where they pose toxicity risks to aquatic ecosystems.

6.5.1 Manganese (Total Mn)

Results for manganese in all groundwater, surface water and leachate tanks samples were reported below the 95% TV of 1.9 mg/L which was considered satisfactory.

6.5.2 Iron (total Fe)

Total iron was measured in surface water and leachate tank LP1 only. All surface water samples in Rocklow Creek were reported at 0.10 mg/L and onsite surface water dam SWP1 reported

0.87mg/L. Total iron in leachate tank LP1 was 0.87 mg/L. The results were generally consistent with historical data.

6.5.3 Iron (Dissolved Fe)

Concentrations of dissolved iron in groundwater ranged from 0.16mg/L (BH21) – 14.3 mg/L (BH12r). The results were generally consistent with the historical data.

6.6 Calcium

Calcium is measured to help identify potential landfill leachate influence, as elevated concentrations may result from the dissolution of calcium-bearing wastes within the landfill. Elevated Calcium can have an impact on groundwater chemistry and salinity that may affect contaminant mobility and downstream water quality.

Results for calcium in groundwater reported results between 38 mg/L (BH18) and 161 mg/L (BH12r).

Results for calcium in Rocklow creek surface water samples were reported between 430 mg/L (SWC_Up) and 519 mg/L (SWC_ 2). Results for calcium in onsite dam SWP1 was 57 mg/L. Calcium in leachate tank LP1 was 315 mg/L.

6.7 Potassium

Elevated potassium levels in groundwater near a landfill could be an indicator of contamination. Leachate from decomposing organic waste in landfills can contribute to higher concentrations of potassium, especially from fertilizers and other waste materials. High potassium concentrations in landfill leachate might reflect the breakdown of organic waste (e.g., food or agricultural waste) containing potassium-rich compounds.

Results for potassium in groundwater and surface water were generally reported at normal levels, and within range of the historical data. Higher than normal results were only reported in BH1c groundwater sample at 211mg/L.

6.8 Organic Analytes

6.8.1 Total Organic Carbon

Total Organic Carbon (TOC) provides a measure of the total concentration of organic material in a water sample. TOC is typically higher in surface water than groundwater. However, high TOC is also characteristic of leachate from landfill. TOC provides a marker for biological activity associated with contaminant degradation and can be used to delineate contaminant plumes. TOC influences geochemical processes by:

- acting as proton donors/acceptors;
- providing pH buffering;
- participating in mineral dissolution/precipitation reactions; and
- providing carbon substrate for microbe-based biodegradation.

Results for TOC in groundwater and surface water samples were generally low and consistent with historical data.

TOC in leachate tank LP1 was reported at 267 mg/L which was generally consistent with historical data.

7 Dust Gauge Results

The below table provides the results of the dust depositions results. A total of four (4) dust collectors were onsite for one (1) month between the dates of 20/11/2025 - 18/12/2025. Sampling was conducted in general accordance with AS3580.10.1. Dust gauge locations are provided in **Figure 14-1** attached. A summary of the results is provided in **Table 7-1** below.

Table 7-1: Summary of Dust Gauge Results

Quarter	Sample ID	Guideline Criteria (g/m ² /month)	Total Insoluble Matter (g/m ² /month)	Comment
Quarter 1 1/10/2025 – 31/12/2025	DDG1	4	1.10	Below SAC
	DDG2		0.30	Below SAC
	DDG3		1.0	Below SAC
	DDG4		3.2	Below SAC

Results for depositional dust sampling during the Q1 2025/26 monitoring periods reported satisfactory levels of dust, below the adopted assessment criteria of 4 g/m²/month. Continue monitoring in accordance with EPL 5984.

8 Methane Monitoring Results

8.1 Surface Gas Methane

The surface gas monitoring for the Q1 2025/26 monitoring period DID NOT detect any levels of methane above the EPA license limits of 500 ppm. The results were considered satisfactory. A table of results is provided in **Appendix D**.

8.2 Gas Accumulation Monitoring in Enclosed Structures

The internal methane testing for enclosed structures within 250m of the landfill during the Q1 2025/26 monitoring period DID NOT detect any levels of methane above the EPA license limits of 1% V/V. The results were considered satisfactory.

9 Flare Operations Results

Weekly average operating temperatures for the flare were supplied by LGI and displayed typical variation associated with a continuous process. Results are summarised in LGI Gas Flare reports included as **Appendix G**.

Average operating temperatures for the Q1 2025/26 monitoring period supplied by LGI displayed an average temperature below the lower operation limit of 760 degrees as specified within EPL 5989. The temperature has remained relatively steady since steady since October 2024.

10 Quality Assurance/Quality Control Data Evaluation (QAQC)

10.1 Field Sampling QAQC

ENRS understands that the sample program was completed in general accordance with the ALS standard operation procedures (SOP) which references current industry guidelines.

It was understood that the QAQC procedures and indicators for field sampling procedures within the SOP included items summarised in Table 10-1.

Table 10-1: Sampling QAQC Procedures

QAQC Indicator	Completeness	Comparability	Representativeness	Precision	Accuracy	Status			Procedures and performance
						Yes	No	N/A	
Details of sampling team	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tertiary qualified, LAA, consistent team.
Reference to sampling plan/method, including any deviations from it – sampling and analysis quality plan	X					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sampling in accordance with the SOP.
Any information that could be required to evaluate measurement uncertainty for subsequent testing (analysis)				X	X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Field sampling records and chain of custody completed in full.
Decontamination procedures carried out between sampling events			X	X	X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Equipment such as decontaminated between samples by washing with phosphate free detergent followed by rinsing with potable water. Re-use of sampling equipment was avoided, where possible. Single use disposable sampling equipment was the preferred method.

QAQC Indicator	Completeness	Comparability	Representativeness	Precision	Accuracy	Status			Procedures and performance
						Yes	No	N/A	
Logs for each sample collected, including date, time, location (with GPS coordinates if possible), sampler, duplicate samples, chemical analyses to be performed, site observations and weather/environmental (i.e. surroundings) conditions. Include any diagrams, maps, photos.		X	X			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sampling field sheets were used as required.
Chain of custody fully identifying – for each sample – the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method, departure time from the site and dispatch courier(s) (where applicable)	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	COC's completed in full.
Field quality assurance/quality control results (e.g. field blank, rinsate blank, trip blank, laboratory prepared trip spike)				X	X	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Field QAQC analysed for chemical samples – field duplicate.
Sample splitting techniques – subsampling, containers/preservation (ensure unique ID for subsequent samples provided)			X			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples obtained in laboratory prepared sample containers appropriate for the analytes.
Statement of duplicate frequency			X	X		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blind field duplicates collected at 1/20 frequency
Background sample results	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reviewed against previous results from the last 3 years.
Field instrument calibrations (when used)				X	X	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Yes field equipment was calibrated prior to use.
Sampling devices and equipment	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual sampling with decontamination procedures and disposable equipment.

QAQC Indicator	Completeness	Comparability	Representativeness	Precision	Accuracy	Status			Procedures and performance
						Yes	No	N/A	
A copy of signed chain-of-custody forms acknowledging receipt date, time and temperature and identity of samples included in shipments	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	COC's completed in full, final records from NATA laboratory attached to CoAs.

10.2 Laboratory QAQC

The QAQC procedures and indicators for laboratory analysis procedures are summarised in Table 10-2.

Table 10-2: Laboratory QAQC procedures

QAQC Indicator	Completeness	Comparability	Representativeness	Precision	Accuracy	Status			Procedures and performance
						Yes	No	N/A	
A copy of signed chain-of-custody forms acknowledging receipt date, time and temperature and identity of samples included in shipments	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All samples were logged and transferred under appropriately completed Chain of Custody Forms.
Record of holding times and a comparison with method specifications	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.
Analytical methods used, including any deviations	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recorded in the CoA.
Laboratory accreditation for analytical methods used, also noting any methods used which are not covered by accreditation	X			X		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recorded in the CoA.
Laboratory performance for the analytical method using inter-laboratory duplicates		X			X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.
Surrogates and spikes used throughout the full method process, or only in parts.	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.

QAQC Indicator	Completeness	Comparability	Representativeness	Precision	Accuracy	Status			Procedures and performance
						Yes	No	N/A	
Results are corrected for the recovery									
A list of what spikes and surrogates were run with their recoveries and acceptance criteria (tabulate)		X			X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.
Practical quantification limits (PQL)	X	X				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recorded in the CoA. PQLs <SAC.
Reference laboratory control sample (LCS) and check results	X					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.
Laboratory duplicate results (tabulate)	X				X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.
Laboratory blank results (tabulate)	X				X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.
Results are within control chart limits	X					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.
Evaluation of all quality assurance/control information listed above against the stated data quality objectives, including a quality assurance/control data evaluation	X	X	X	X	X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Records documented in the laboratory QAQC report attached to CoA.

10.3 QAQC Discussion

A summary of the Data Quality performance and evaluation is summarised in **Table 10-3** below:

Table 10-3: QAQC and Data Evaluation Summary

Objective	Performance	Status
Documentation completeness	<ul style="list-style-type: none"> • Completion of field records; • Chain of Custody (COC) documentation; • Calibration certificates for equipment; • NATA Laboratory Sample Receipt Notification (SRN); and • NATA laboratory Certificate of Analysis (COA). • Sample Location Plans. • Sample field sheets. 	✓

Objective	Performance	Status
Precision & accuracy for sampling & analysis	<ul style="list-style-type: none"> • Use only trained and qualified field personnel; • Calibration certificates for field equipment; • Appropriate sampling and field techniques; • Decontamination procedures; • Achieve laboratory QC criteria; and • Achieve QAQC requirements for RPDs and Recovery 	✓
Identify Anomalies	<ul style="list-style-type: none"> • No elevated results not expected by the CSM; • No labelling or sample management errors; • No laboratory analyses or reporting errors 	✓
DATA completeness	<ul style="list-style-type: none"> • Sampling density comparison meets NSW EPA (1995) 'Sampling Design Guidelines' for or all potential contaminants of concern at all areas of environmental concern; and • Systematic and judgemental sampling to provide sufficient data representative of all AECs. 	✓
Data comparability	<ul style="list-style-type: none"> • Use of appropriate techniques for the sampling, storage and transportation of sample media; • Use of NATA certified laboratory using NEPM endorsed procedures; and • Comparison with previous site information, if any. 	✓
Data representative ness	<ul style="list-style-type: none"> • Adequate sampling coverage at all points listed in the EPL. • Selection of representative samples from each sampling location; & • Analysis for PCoC. • Achieve laboratory QC criteria. • Achieve QAQC requirements for RPDs and Recovery. 	✓

The laboratory was NATA accredited, and the Practical Quantitation Limits (PQL) also referred to as Limits of Reporting (LOR) were within the acceptable levels for the assessment criteria. Laboratory certificates of analysis provided in **Appendix C** indicate that for the samples collected during the scope of works, sampling techniques, transport procedures and laboratory analysis were satisfactory

In summary, the QA/QC indicators all complied with the ALS standards or showed variations that would have no significant effect on the quality of the data or the conclusions of this assessment. Based on the following conclusions it is therefore determined that, for the purposes of this study, the QA/QC results are valid, and ***the quality of the data is acceptable for use in this assessment:***

- The data was representative of site conditions;
- The data was complete with comprehensive records available from all field work undertaken, and all areas of concern sampled and analysed;
- The data was comparable for samples analysed at different times, and consistent with field observations; and
- The data was precise and accurate based on the laboratory achievement of relevant quality control criteria.

11 Quarterly Environmental Assessment

11.1 Monitoring Point Summary

Based on the results of field measurements and NATA laboratory results conducted by ALS, the following summaries were noted for the Q1 2025/26 monitoring period;

- Groundwater monitoring wells located across the site reported elevated concentrations of key indicators of leachate above the site assessment criteria, specifically ammonia. Groundwater wells were located across the Site including upgradient, adjacent to and downgradient of the landfill cells. The elevated results were generally consistent with the available historical data;
- Out of all the groundwater monitoring well locations, monitoring point BH1c reported the highest concentrations analytes associated with leachate. Results have historically remained elevated and in exceedance of the SAC;
- The leachate tank LP1 reported elevated results of key leachate analytes which was considered to be characteristic of untreated leachate. As the leachate is contained and treated, this may be considered satisfactory;
- Onsite surface water dam SWP1 generally reported results within the Site Assessment Criteria with no significant changes;
- Offsite surface water of Rocklow Creek generally reported conditions characteristic of a tidal river system. Concentrations of key analytes associated with landfill leachate within the creek were generally reported below adopted the ecological protection trigger values. However, concentrations of ammonia were reported above the ecological stressor value at each sample point;
- Dust monitoring reported no exceedances
- Surface gas monitoring did not detect any methane above the allowable limit across the site surface transects or within onsite buildings;
- No overflow events occurred within the Q1 quarterly monitoring period; and
- Review of the gas flare reports prepared by LGI reported gas flare temperatures below the minimum requirement of 760 degrees Celsius as specified within EPL 5984. The temperatures have remained relatively steady since October 2024.

11.2 Environmental Management

11.2.1 Landfill Operations

ENRS understand 'solid' waste (general solid waste putrescible and non-putrescible) landfill operations are ongoing at the Site. Landfill practices should be conducted in accordance with the Site's Landfill Environmental Management Plan (LEMP) and the EPA Solid Waste Landfill Guidelines (EPA; 2016).

11.3 Environmental Safeguards

Appropriate management actions are required to continue to prevent and detect potential groundwater and surface water pollution. The nearest sensitive receptors for any uncontrolled Site water and leachate include; areas of adjoining bushland; recreational users of the Minnamurra River

estuary environs, down gradient stakeholders; and down gradient alluvial aquifers, swamps, Rocklow Creek, Minnamurra River and Groundwater Dependent Ecosystems (GDE).

It is recommended that any drainage and detention structures are inspected annually by a suitably qualified environmental professional to assess their structural integrity and identify the need for any maintenance (such as removal of deep rooted vegetation, sediment, and re-lining).

Access tracks to sampling points should be inspected and maintained prior to each quarterly sampling events.

Continue to review surface water and groundwater monitoring results from up and down gradient of the land fill cells and offsite sampling locations within Rocklow Creek.

Ensure the integrity of the landfill cap is maintained. This is to avoid additional surface infiltration during rainfall events and the release of landfill gasses. Continue to monitor surface methane gas in order to assess the capping integrity of the landfill cells.

11.4 Monitoring Program

The Site's EPL's and monitoring regime should be reviewed annually by SCC and the NSW EPA.

Review of the quarterly monitoring results indicated no significant change in environmental conditions at the Site. Key indicators of leachate were reported within the groundwater monitoring locations across the Site. Future sampling events should continue to monitor the key indicators of leachate within ground and surface waters, especially concentration of ammonia and nitrate.

Should monitoring continue to report any significant changes in analyte concentrations the need for additional monitoring locations should be reviewed, including additional groundwater monitoring bores both up and down gradient locations of areas with analytical exceedances.

It is recommended that water quality results from future monitoring rounds continue be forwarded to a suitably qualified environmental professional for review within the laboratory holding time to compare against relevant guidelines and identify any irregularities so that additional testing may be conducted within the sample holding time.

12 Conclusions

Based on the findings obtained during this quarterly monitoring program the following conclusions and recommendations are provided:

- Shallow groundwater flow is expected to mimic topography with low hydraulic gradients flowing towards the south and southeast towards Rocklow Creek. Depth to groundwater was <5mBGL. The nearest sensitive receptors are likely to include; recreational users of the Minnamurra River estuary environs; down gradient stakeholders; and downgradient alluvial aquifers, swamps, Rocklow Creek, Minnamurra River and Groundwater Dependent Ecosystems near discharge zones;
- Groundwater throughout the quarterly monitoring period reported exceedances above the assessment criteria for; ammonia, heavy metals and nitrate within groundwater wells across the

Site. The analytes were key indicators of leachate. The exceedances were within range of historical values with no significant changes in concentrations;

- Offsite sample locations within Rocklow Creek generally reported concentrations of analytes below the SAC. However, concentrations of ammonia were generally reported slightly above the ecological stressor value;
- Surface gas methane monitoring of the landfill cap reported satisfactory results all within the adopted assessment criteria;
- Methane levels of enclosed structures on or within 250m of deposited waste or leachate storage were tested and found to be below the acceptable threshold for 1% (volume/volume) in all cases;
- Dust deposition gauges recorded satisfactory results below the guidelines provided in AS3580.10.1. Monitoring should continue in accordance with EPL 5984 requirements;
- Gas Flare temperatures were reported below the required KPI of 760 degrees Celsius;
- Based on the data reviewed for the quarterly monitoring period, contaminants associated with the landfill cell, leachate dam/s and general site uses were present within groundwater and consistent with the historical data;
- Should any change in Site conditions or incident occur which causes a potential environmental impact, a suitable environmental professional should be engaged to further assess the Site and consider requirements for any additional monitoring; and
- This report must be read in conjunction with the attached Statement of Limitations.

13 References

- ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- CRC Care (2011). Health screening levels for petroleum hydrocarbons in soil and groundwater.
- DEC NSW. (2007). *Guidelines for the Assessment and Management of Groundwater Contamination*.
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- NSW EPA. (2014). *Waste Classification Guidelines. Part 1 Classifying Waste*.
- NSW EPA. (2020). *Guidelines for consultants reporting on contaminated land*.
- NSW EPA (2022) Approved methods for the sampling and analysis of water pollutants in NSW
- NSW EPA. (2022). *Sampling design guidelines for contaminated land. Sampling design part 1: Application*.
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- WA DOH. (2009). *Guidelines for the assessment, remediation and management of asbestos-contaminated sites in Western Australia*. Perth, WA: Western Australia Department of Health.
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- Environmental Earth Sciences (2018) Annual Report 2018- Environmental Monitoring at the Dunmore Recycling and Waste Depot, Dunmore, New South Wales
- NSW EPA (Mar. 2020) Environmental Protection Licence (EPL) 5984
- NSW EPA (Dec. 2017) Environmental Protection Licence (EPL) 12903
- NSW Government (1997). Protection of the Environment Operations Act.
- NSW Government (2005). Protection of the Environment (Waste) Regulation.
- NSW Landcom (2008). Managing Urban Stormwater: Soils and Construction, Volume 2B –Waste Landfills.
- ANZECC (1996). Guidelines for the Laboratory Analysis of Contaminated Materials.
- ANZECC (2000) Australian Water Quality Guidelines for Fresh and Marine Waters. Australian and New Zealand Environment & Conservation Council. ISBN 09578245 0 5 (set).

14 Limitations

This report and the associated services performed by ENRS are in accordance with the scope of services set out in the contract between ENRS and the Client. The scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to Site.

ENRS derived the data in this report primarily from visual inspections, and, limited sample collection and analysis made on the dates indicated. In preparing this report, ENRS has relied upon, and presumed accurate, certain information provided by government authorities, the Client and others identified herein. The report has been prepared on the basis that while ENRS believes all the information in it is deemed reliable and accurate at the time of preparing the report, it does not warrant its accuracy or completeness and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by the Client arising from or in connection with the supply or use of the whole or any part of the information in the report through any cause whatsoever.

Limitations also apply to analytical methods used in the identification of substances (or parameters). These limitations may be due to non-homogenous material being sampled (i.e. the sample to be analysed may not be representative), low concentrations, the presence of 'masking' agents and the restrictions of the approved analytical technique. As such, non-statistically significant sampling results can only be interpreted as 'indicative' and not used for quantitative assessments.

The data, findings, observations, conclusions and recommendations in the report are based solely upon the state of Site at the time of the investigation. The passage of time, manifestation of latent conditions or impacts of future events (e.g. changes in legislation, scientific knowledge, land uses, etc) may render the report inaccurate. In those circumstances, ENRS shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of the report.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between ENRS and the Client. ENRS accepts no liability or responsibility whatsoever and expressly disclaims any responsibility for or in respect of any use of or reliance upon this report by any third party or parties.

It is the responsibility of the Client to accept if the Client so chooses any recommendations contained within and implement them in an appropriate, suitable and timely manner.

FIGURES

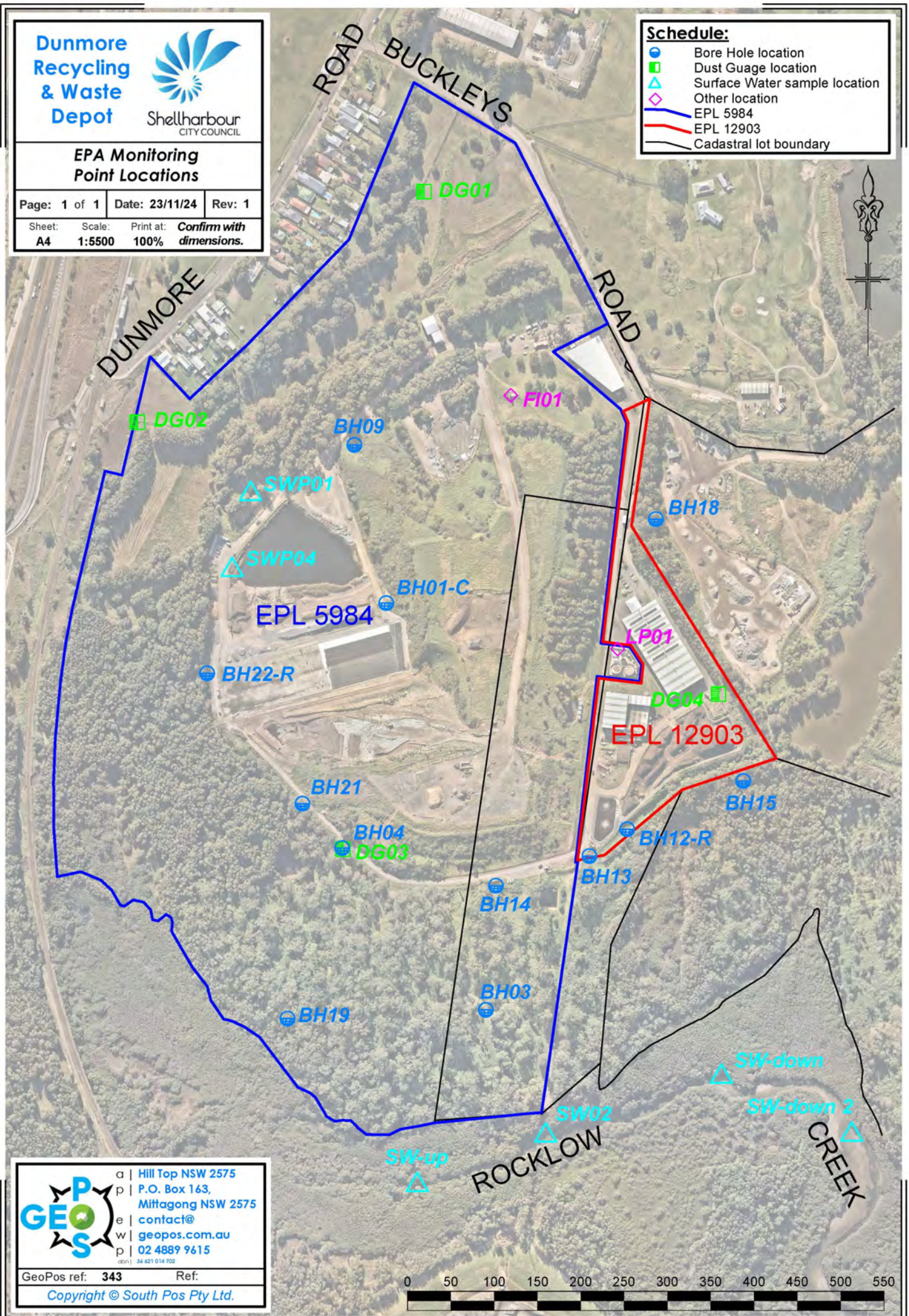
**EPA Monitoring
Point Locations**

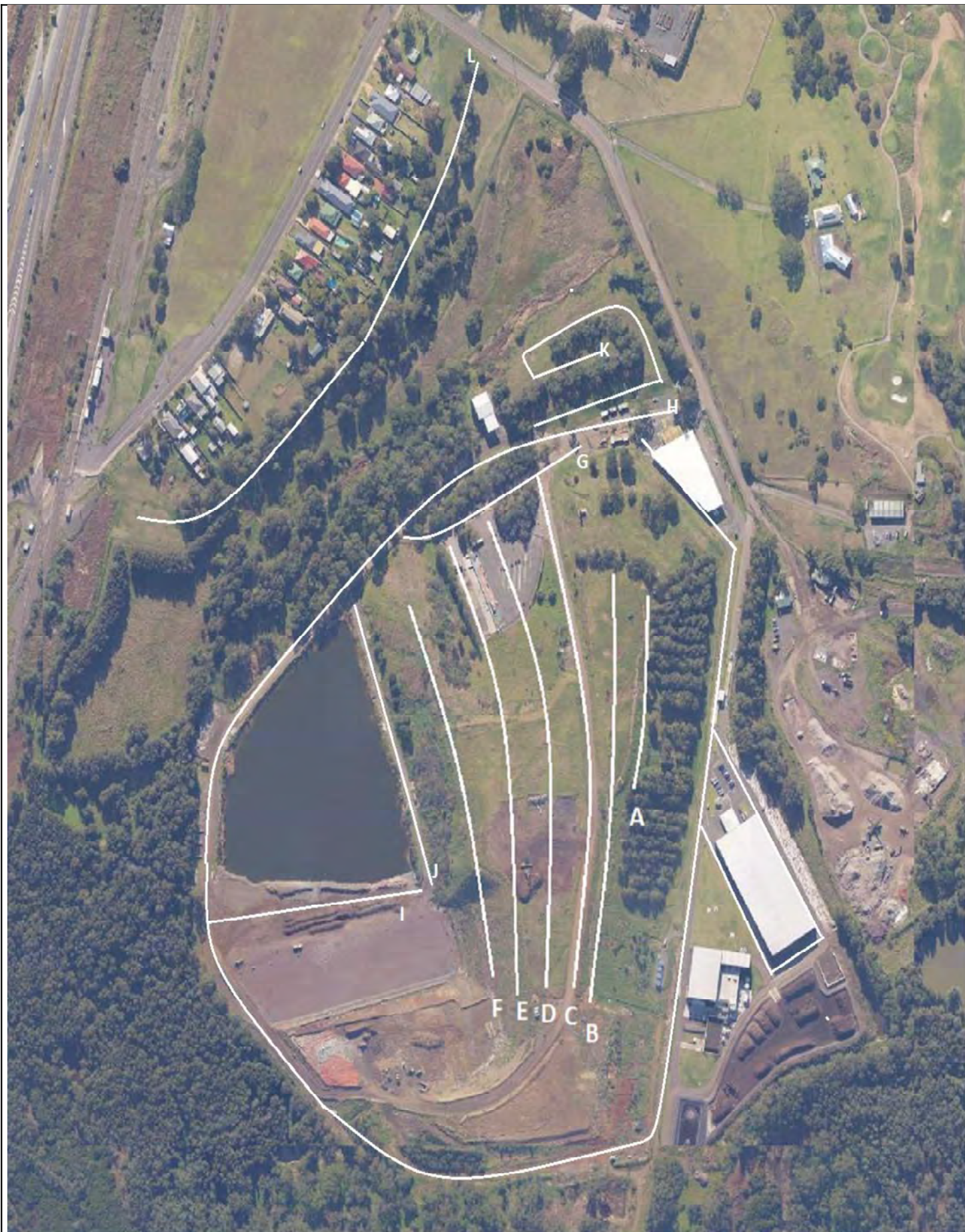
Page: 1 of 1 | Date: 23/11/24 | Rev: 1

Sheet: A4 | Scale: 1:5500 | Print at: 100% | **Confirm with dimensions.**

Schedule:

- Bore Hole location
- Dust Gauge location
- △ Surface Water sample location
- ◆ Other location
- EPL 5984
- EPL 12903
- Cadastral lot boundary





ENRS

Environment & Natural Resource Solutions

108 Jerry Bailey Road, Shoalhaven Heads, NSW, 2535
Tel: 02 4448 5490 Fax: 02 90374708
projects@enrs.com.au www.enrs.com.au

Client:	Shellharbour City Council	Drawn:	PL	Figure:	3
Project:	ENRS0033	Source:	SixMaps	Date:	16/01/2020
Location:	Dunmore Recycling & Waste Depot 44 Buckleys Rd, Dunmore, NSW, 2529	Scale:	NA	Title:	Surface Gas Sample transects
		Status:	Rev 1		

TABLES OF RESULTS

TABLE 14-1: Total Concentration Results
Quarterly Water Monitoring Results - December 2025 : Dunmore Recycling and Waste Depot

GILs -Trigger Values for Freshwater (Protection of 95% of Species) ^A					-	-	-	-	-	1.9	-	-	-	0.9 (pH 8)	-	0.7	-	-	-	-	-	-	-	-	6.5 - 8.5	2200	-	-		
GILs -Trigger Values for Marine Water (Protection of 95% of Species) ^A					-	-	-	-	-	-	-	-	0.91 (pH 8)	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Australian Drinking Water Guidelines (2018) ^C				Health	-	-	-	-	-	0.5	-	-	1.5	-	3	50	-	-	-	-	-	-	-	-	-	6.5 - 8.5	-	-	-	
				Aesthetic	250	-	-	180	-	0.1	0.3	0.3	-	0.5	-	-	-	-	250	-	-	-	-	5	6.5 - 8.5	-	-	-		
Lab Report No.	Sample No.	Sample type	EPA No.	Date Sampled	Chloride	Calcium	Magnesium	Sodium	Potassium	Manganese	Total Iron	Dissolved Iron	Fluoride	Ammonia as N	Nitrite as N	Nitrate as N	Total Organic Carbon	Bicarbonate Alkalinity as CaCO3	Total Alkalinity as CaCO3	Sulfate as SO4 - Turbidimetric	Dissolved Oxygen	Dissolved Oxygen - % Saturation	Suspended Solids (SS)	Turbidity	pH	Electrical Conductivity (Non Compensated)	Temperature	Standing Water Level	Comments	
Units					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	mg/L	NTU	pH	µS/cm	°C	mbgl		
Laboratory PQL					1	1	1	1	1	0.001	0.05	0.05	0.1	0.01	0.01	0.01	1	1	1	1	0.01	0.1	5	0.1	0.01	1	0.1	0.01	-	
EW2505946001	BH1c	Groundwater	3	Dec 2025	865	114			211	0.09		12.30	0.5	306.00	< 0.10	< 0.10	150	2,530	2,530	< 10					7.00	6,860	25.3	3.32	-	
EW2505946002	BH3	Groundwater	5	Dec 2025	122	131			42	0.16		10.20	0.2	12.50	0.13	3.25	18	440	440	132					7.20	1,400	17.9	3.21	-	
EW2505946003	BH4	Groundwater	6	Dec 2025	24	100			43	0.12		3.18	0.2	2.69	< 0.01	< 0.01	9	339	339	79					7.10	831	18.6	4.41	-	
EW2505946004	BH9	Groundwater	18	Dec 2025	154	109			57	0.45		1.01	0.8	96.30	0.03	0.09	87	1,160	1,160	< 1					7.20	2,430	18.0	3.38	-	
EW2505946005	BH12r	Groundwater	17	Dec 2025	282	161			27	0.47		14.30	0.6	5.84	0.04	0.53	77	592	592	64					6.80	1,940	20.6	4.38	-	
EW2505946006	BH13	Groundwater	10	Dec 2025	306	154			22	0.57		3.91	0.5	11.60	0.05	4.25	45	771	771	62					6.90	2,260	22.0	4.38	-	
EW2505946007	BH14	Groundwater	11	Dec 2025	155	132			17	0.21		4.51	1.1	1.93	0.31	2.03	22	442	442	130					6.90	1,460	20.9	4.85	-	
EW2505946008	BH15	Groundwater	7	Dec 2025	112	84			71	0.20		5.21	0.3	4.72	0.02	0.27	19	303	303	250					7.00	1,340	18.8	0.80	-	
EW2505946010	BH18	Groundwater	25	Dec 2025	12	38			6	0.08		1.01	0.2	0.66	< 0.01	< 0.01	10	166	166	< 1					6.80	324	19.2	2.41	-	
EW2505946009	BH19r	Groundwater	16	Dec 2025	28	83			57	0.06		0.82	0.2	1.03	0.01	0.02	12	327	327	45					7.40	752	18.1	4.59	-	
EW2505946011	BH21	Groundwater	23	Dec 2025	312	132			15	0.62		0.16	0.4	4.62	< 0.01	0.04	36	789	789	258					7.20	2,510	22.2	3.32	-	
EW2505946012	BH22	Groundwater	24	Dec 2025	216	81			15	0.10		7.36	0.5	7.76	< 0.01	< 0.01	36	504	504	170					7.10	1,780	18.8	2.67	-	
EW2505944001	SWP1	Surfacewater	1	Dec 2025	127	57	34	154	15	0.53	0.18	0.12	0.3	0.13	< 0.01	< 0.01	48	399	399	35	2.62	27.8	6	4.30	7.40	1180	18.0		-	
EW2505944003	SWC_up	Surfacewater	20	Dec 2025	15,600	430	1,210	9,380	365		< 0.10	< 0.10	0.9	0.08	< 0.01	< 0.01	5	161	161	2,500	5.21	67.8	< 5	2.80	7.40	41100			-	
EW2502852002	SWC_2	Surface Water	19	Dec 2025		519			411		< 0.10	< 0.10	0.9	0.08	< 0.01	< 0.01	4	147	147	2,680	5.10	66.7	< 5		7.50	35000			-	
EW2505944004	SWC_down	Surfacewater	21	Dec 2025	17,900	458	1,340	10,200	395		< 0.10	0.22	0.9	0.07	< 0.01	< 0.01	4	148	148	2,750	5.83	77.5	< 5	2.50	7.50	42600			-	
EW2505944005	SWC_down_2	Surfacewater	22	Dec 2025	17,300	518	1,520	11,600	449		< 0.10	< 0.10	0.9	0.05	< 0.01	< 0.01	3	140	140	2,800	5.65	75.3	< 5	2.10	7.50	43800			-	
EW2505945001	Leachate Storage Tank LP1	Leachate	2	Dec 2025	128	315			361	0.15	0.87		0.3	0.43	< 0.01	753.00	267	286	286	< 1	7.17	90.5			8.10	9,620	25.3		-	

TABLE 14-2: Ammonia Results
December 2025 Quarter 1: Dunmore Recycling and Waste Depot

Ammonia Results compared against the pH Modified Trigger Values - ANZACC (2000) Table 8.3.7				pH		Assessment Criteria		Result	Comment
				pH (lab)	Ecological Stressor Value	pH Modified Trigger Values - 95% Freshwater	pH Modified Trigger Values - 95% Marine Water	Ammonia As N	
				0.1	-	-	-	0.01	
Lab Report No.		Sample ID.	Date	pH	mg/L	mg/L	mg/L	mg/L	
EW2501281001	Groundwater	BH1c	3/12/2025	7.00	0.20	2.18	3.91	306.00	> TV
EW2501281002		BH3	3/12/2025	7.20		1.99	3.20	12.50	> TV
EW2501281003		BH4	3/12/2025	7.10		2.09	3.56	2.69	> TV
EW2501281004		BH9	3/12/2025	7.20		1.99	3.20	96.30	> TV
EW2501281005		BH12r	3/12/2025	6.80		2.33	4.55	5.84	> TV
EW2501281006		BH13	3/12/2025	6.90		2.26	4.24	11.60	> TV
EW2501281007		BH14	3/12/2025	6.90		2.26	4.24	1.93	> TV
EW2501281008		BH15	3/12/2025	7.00		2.18	3.91	4.72	> TV
EW2501281009		BH18	3/12/2025	7.40		1.75	2.49	1.03	> TV
EW2501281010		BH19r	3/12/2025	6.80		2.33	4.55	0.66	> TV
EW2501281011		BH21	3/12/2025	7.20		1.99	3.20	4.62	> TV
EW2501281012		BH22	3/12/2025	7.10		2.09	3.56	7.76	> TV
EW2501285001	Onsite Dam	SWP1	2/12/2025	7.40	0.20	1.75	2.49	0.13	> TV
EW2501285003	Rocklow Creek Surface Water	SWC_up	2/12/2025	7.40		1.75	2.49	0.08	> TV
EW2501285002		SWC_2	2/12/2025	7.50		1.61	2.15	0.08	> TV
EW2501285004		SWC_down	2/12/2025	7.50		1.61	2.15	0.07	>TV
EW2501285005		SWC_down_2	2/12/2025	7.50		1.61	2.15	0.05	>TV

TABLE 14-3: Duplicate Groundwater Sample Results and RPD Data

Lab Report No.				EW2505946010	EW2505946013	RPD	
Sample No.				BH18	GWDuplicate		
Sample type				Groundwater	GWQC		
EPA No,				25	QC1		
Date Sampled				3/12/2025	3/12/2025		
Analyte	Units	PQL	5 x PQL	Result	Result		
Chloride	mg/L	1	5	12	12	✓	0.00
Calcium	mg/L	1	5	38	37	✓	2.67
Potassium	mg/L	1	5	6	6	✓	0.00
Manganese	mg/L	0.001	0.005	0.076	0.074	✓	2.67
Dissolved Iron	mg/L	0.05	0.25	1.01	1.01	✓	0.00
Fluoride	mg/L	0.1	0.5	0.20	0.20	✓	0.00
Ammonia as N	mg/L	0.01	0.05	0.66	0.63	✓	4.65
Nitrite as N	mg/L	0.01	0.05	< 0.01	< 0.01	✓	0.00
Nitrate as N	mg/L	0.01	0.05	< 0.01	< 0.01	✓	0.00
Nitrite + Nitrate as N	mg/L	0.01	0.05	< 0.01	< 0.01	✓	0.00
Total Organic Carbon	mg/L	1	5	10	10	✓	0.00
Bicarbonate Alkalinity as CaCO ₃	mg/L	1	5	166	166	✓	0.00
Total Alkalinity as CaCO ₃	mg/L	1	5	166	166	✓	0.00
Sulfate as SO ₄ - Turbidimetric	mg/L	1	5	< 1	< 1	✓	0.00
pH	pH	0.01	0.05	6.80	6.80	✓	0.00
Electrical Conductivity (Non Compensated)	µS/cm	1	5	324	324	✓	0.00
Temperature	°C	0.1	0.5	19.2	19.2	✓	0.00
Standing Water Level	mbgl	-		2.41	2.41	✓	0.00

TABLE 14-4: Duplicate Surface Water Results and RPD Data

Lab Report No.						RPD
Sample No.				SWC_2	SWDuplicate	
Sample type						
EPA No,						
Date Sampled				2/12/2025	2/12/2025	
Analyte	Units	PQL	5 x PQL	Result	Result	
Calcium	mg/L	1	5	519	485	✓ 6.77
Potassium	mg/L	1	5	411	418	✓ 1.69
Total Iron	mg/L	0.05	0.25	< 0.10	< 0.10	✓ 0.00
Dissolved Iron	mg/L	0.05	0.25	< 0.10	< 0.10	✓ 0.00
Fluoride	mg/L	0.1	0.5	0.9	0.9	✓ 0.00
Ammonia as N	mg/L	0.01	0.05	0.08	0.08	✓ 0.00
Nitrite as N	mg/L	0.01	0.05	< 0.01	< 0.01	✓ 0.00
Nitrate as N	mg/L	0.01	0.05	< 0.01	< 0.01	✓ 0.00
Nitrite + Nitrate as N	mg/L	0.01	0.05	< 0.01	< 0.01	✓ 0.00
Total Organic Carbon	mg/L	1	5	4	4	✓ 0.00
Sulfate as SO4 - Turbidimetric	mg/L	1	5	2,680	2,590	✓ 3.42
Dissolved Oxygen	mg/L	0.01	0.05	5.10	5.10	✓ 0.00
pH	pH	0.01	0.05	7.50	7.50	✓ 0.00

CHARTS

Charts 3-18: Groundwater Charts

Chart 3: Ammonia as N (mg/L)

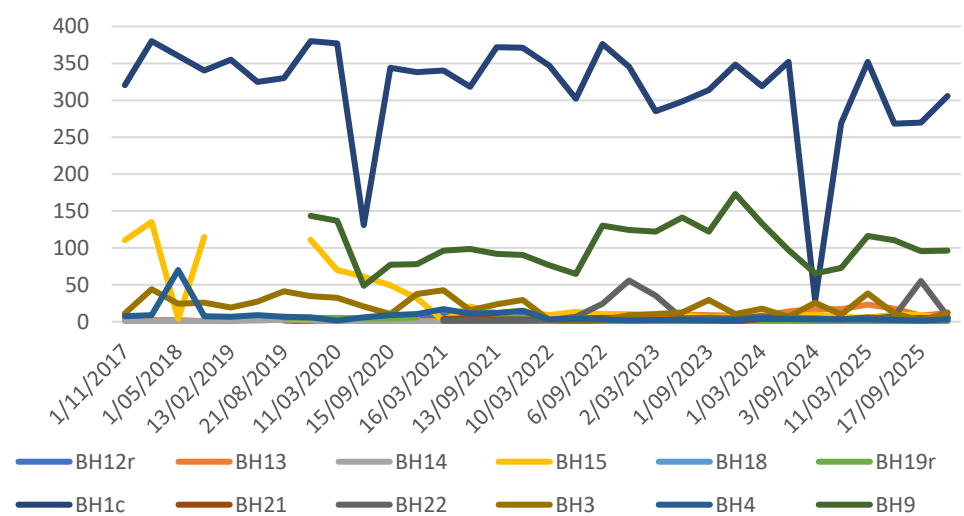


Chart 4: Bicarbonate Alkalinity as CaCO3 (mg/L)

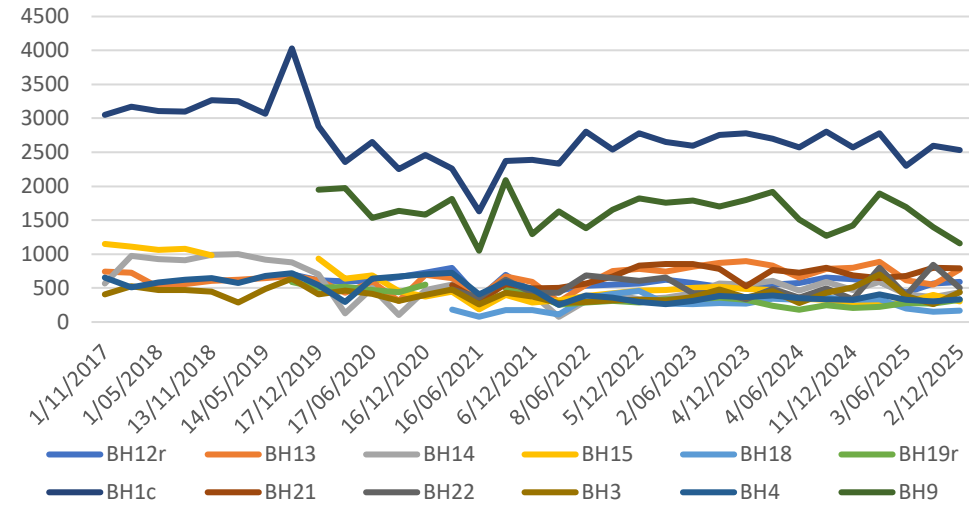


Chart 7: Calcium (mg/L)

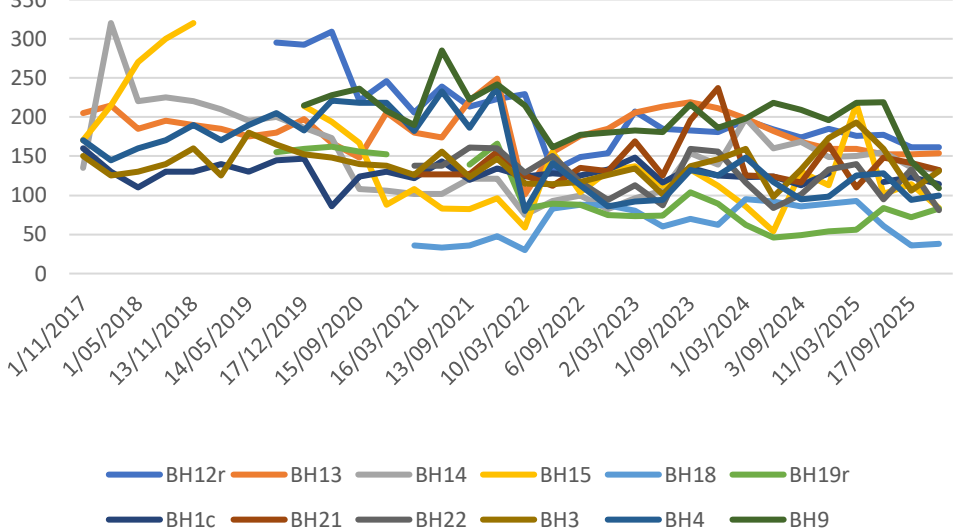


Chart 8: Chloride (mg/L)

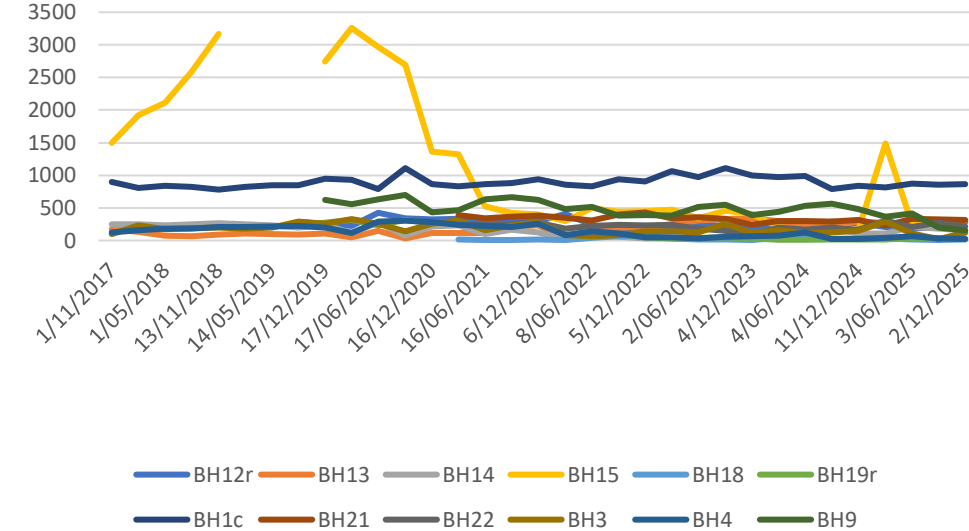


Chart 6: Depth to Water (mbgl TOC)

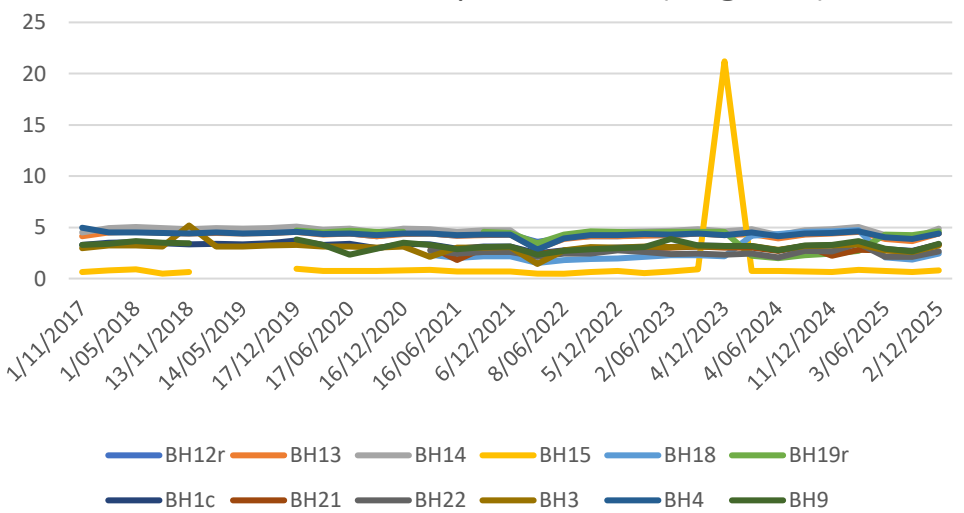


Chart 7: Dissolved Iron (mg/L)

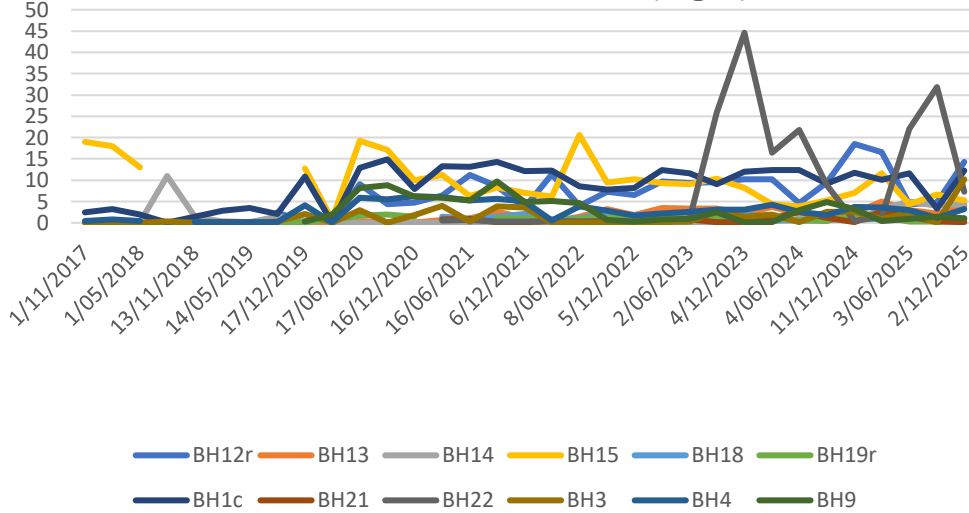


Chart 9: Electrical Conductivity (Us/cm)

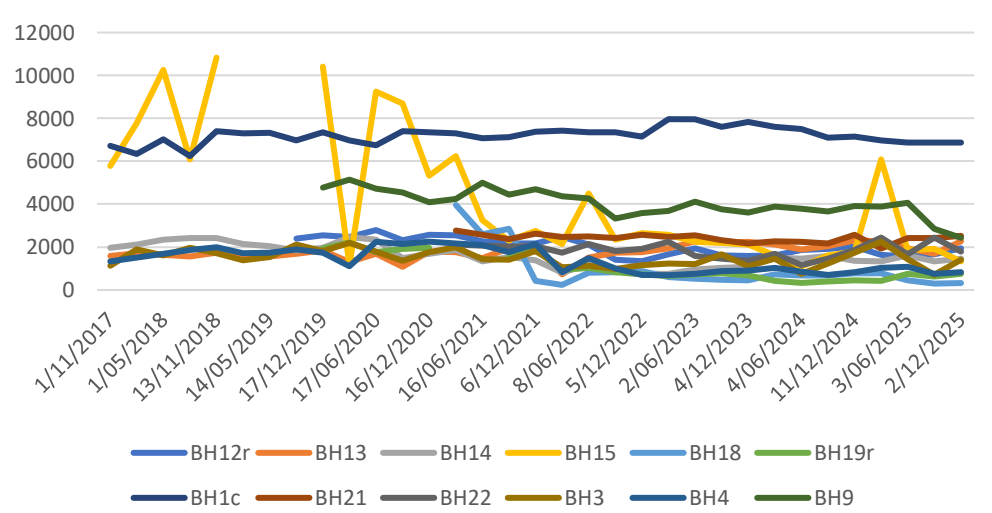
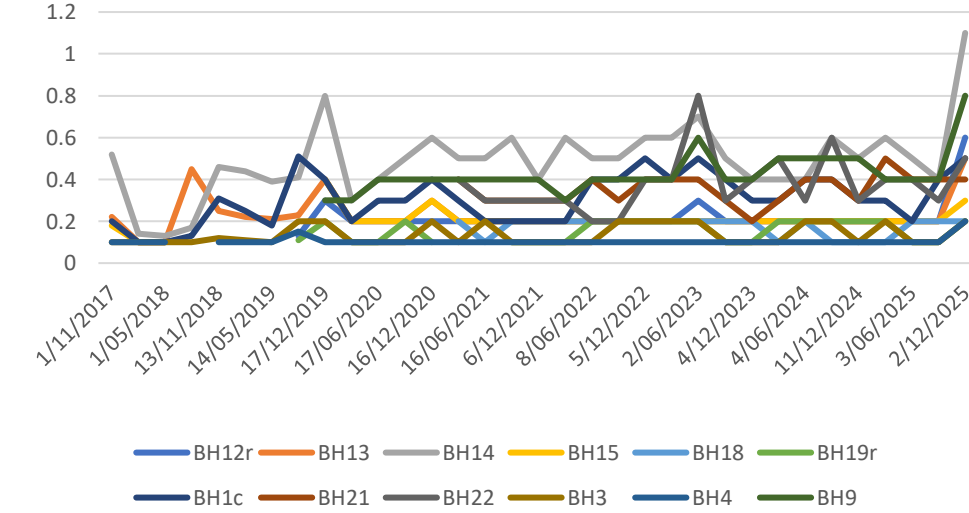
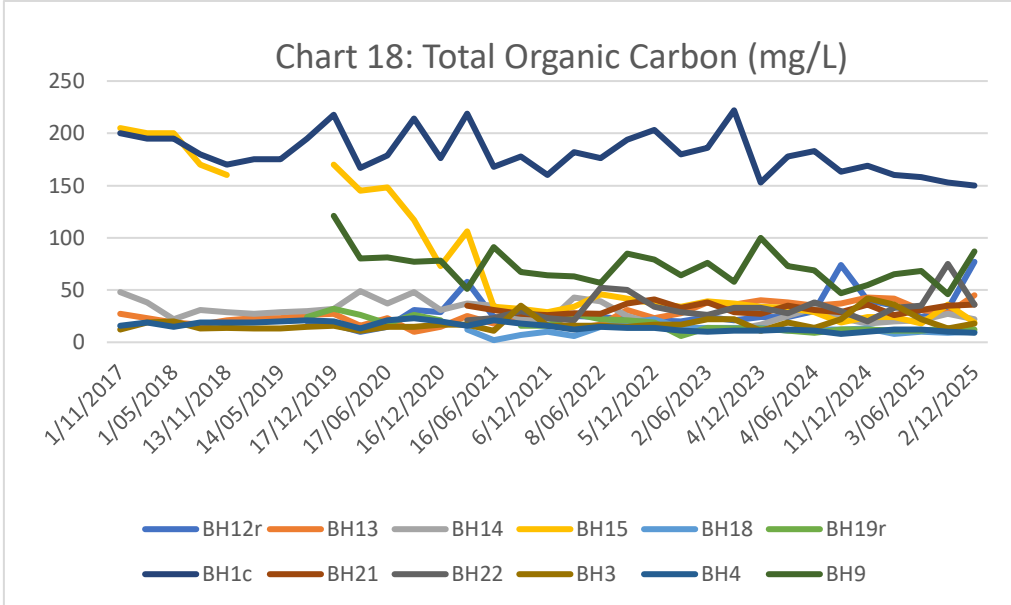
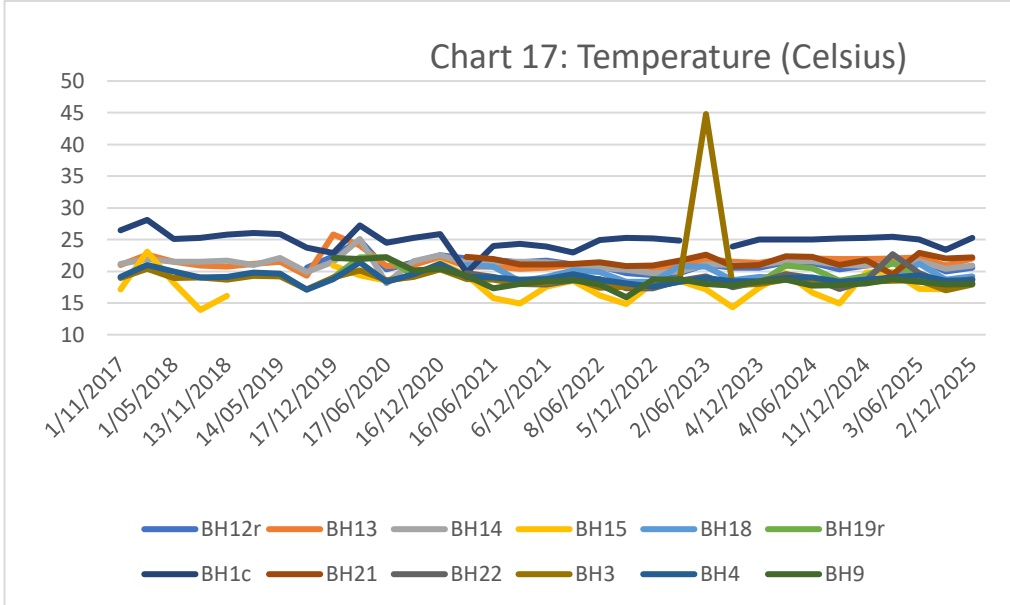
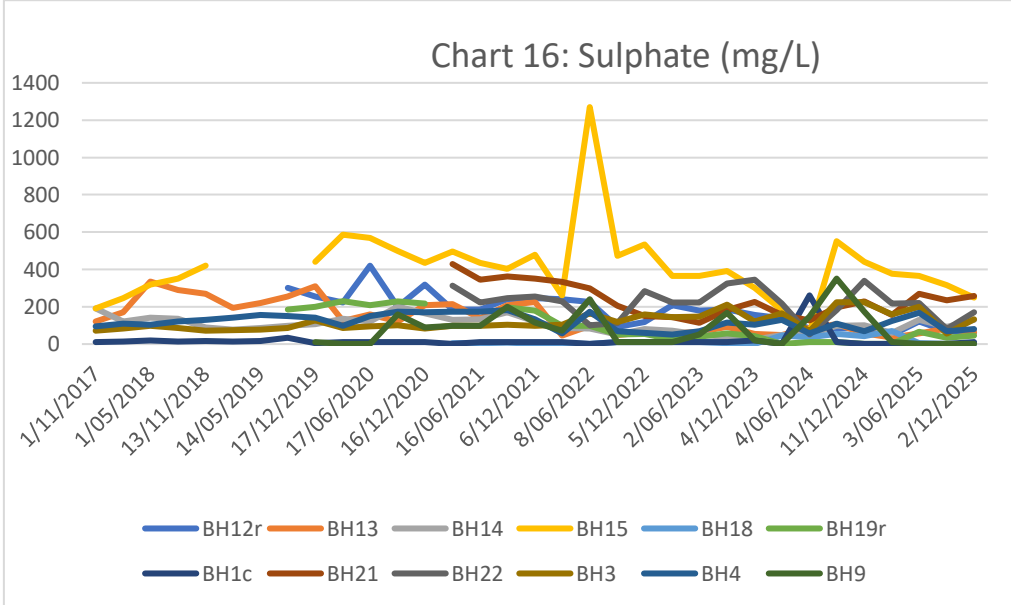
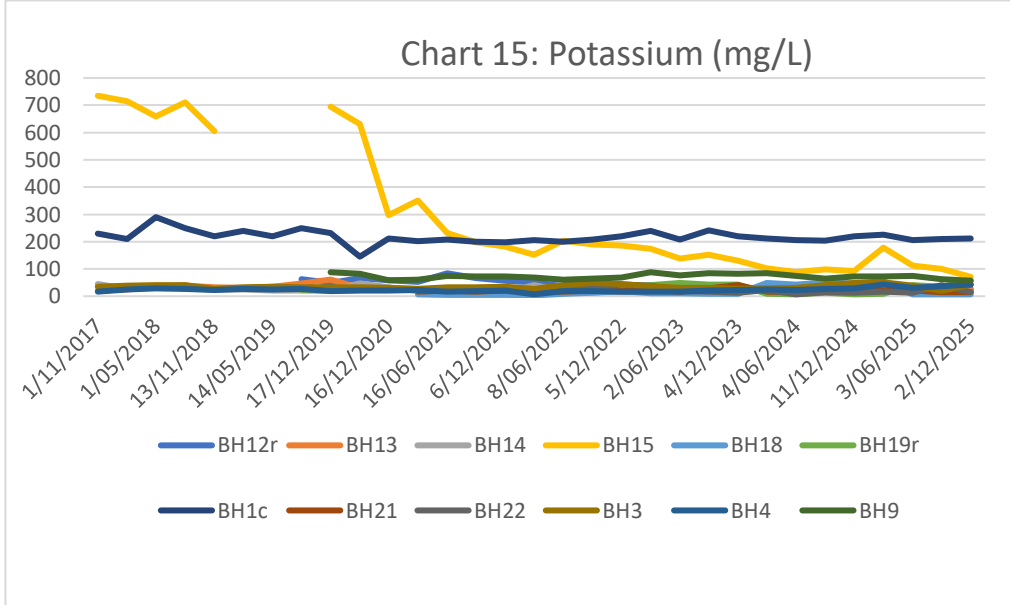
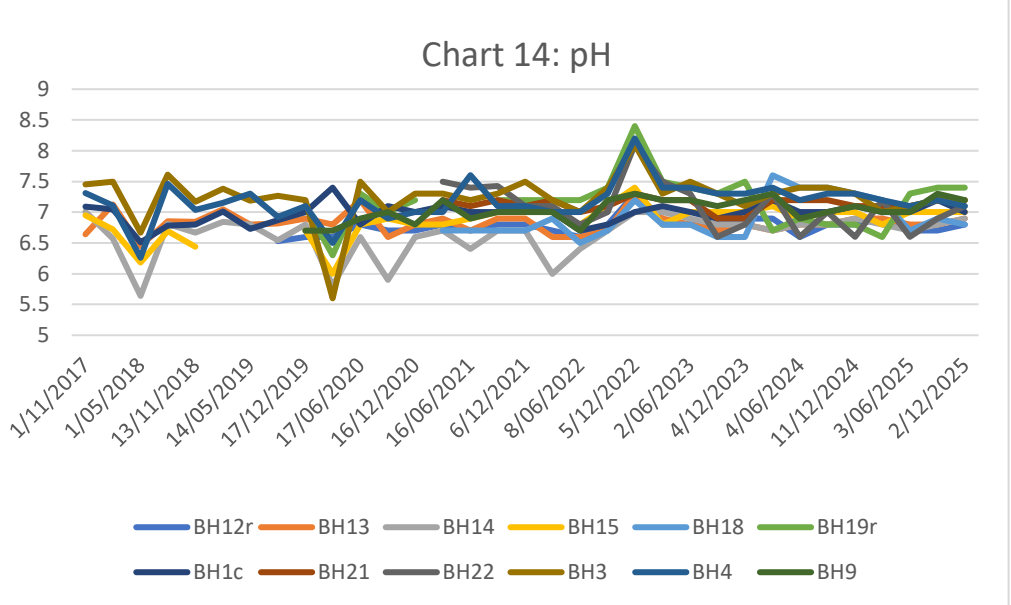
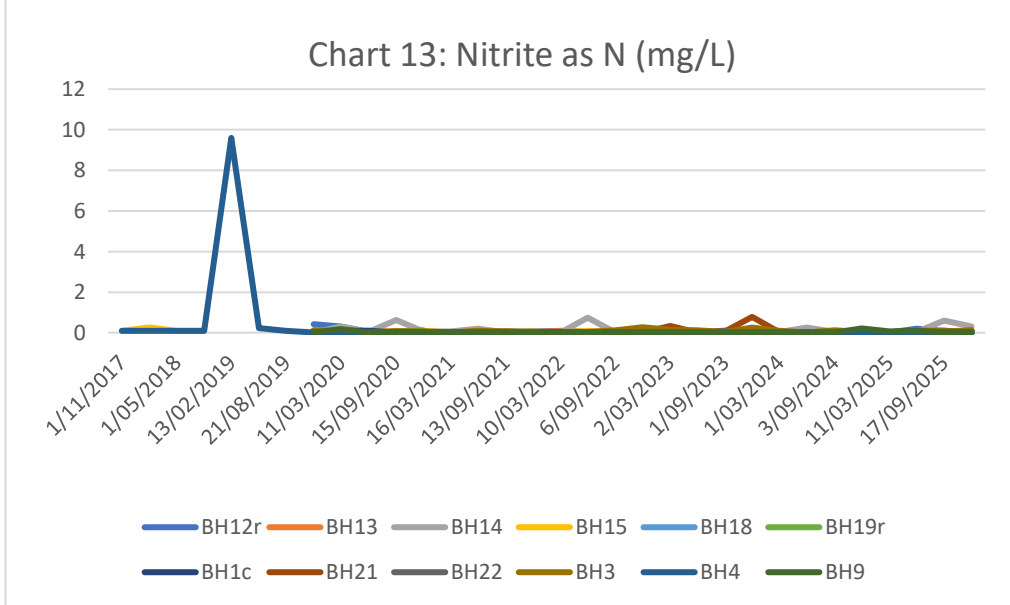
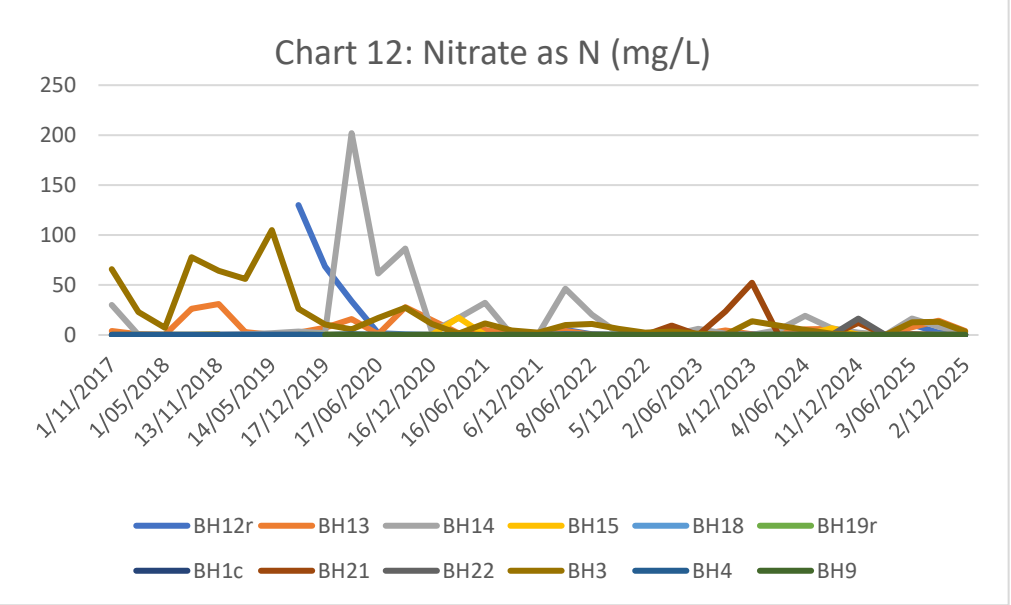
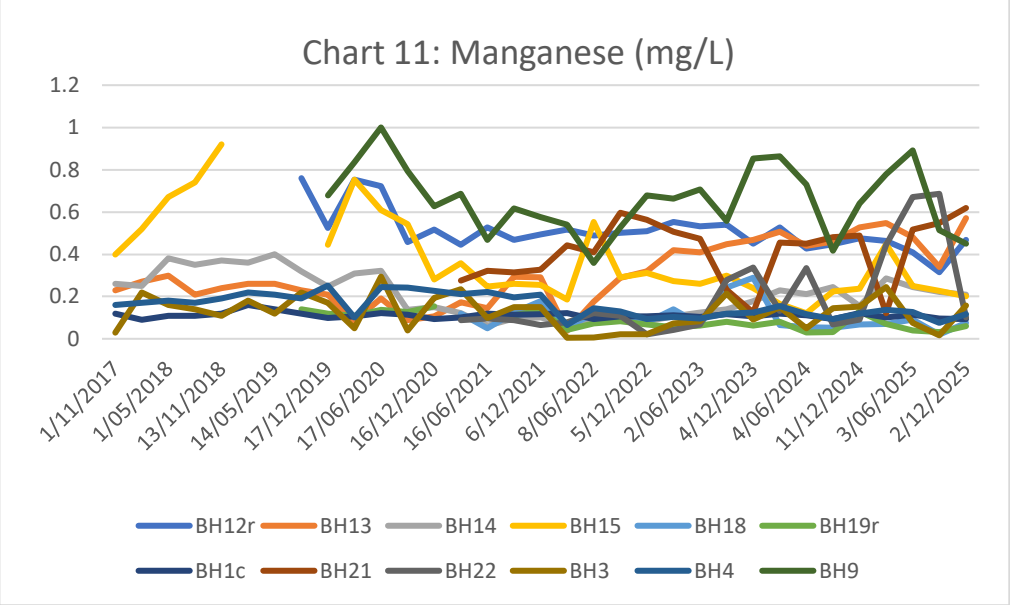


Chart 10: Fluoride (mg/L)





Charts 19-34: Onsite Surface Water Charts

Chart 19: Ammonia as N (mg/L)

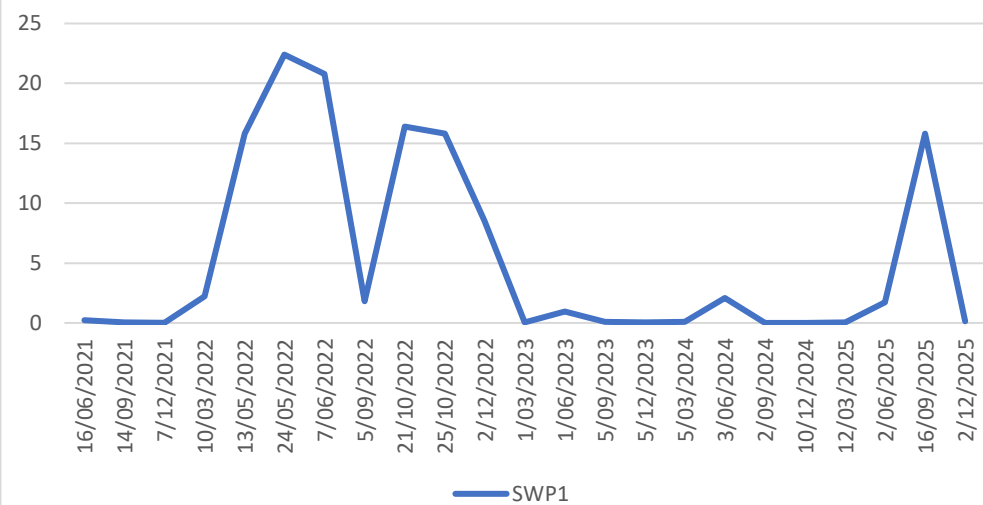


Chart 20: Calcium (mg/L)

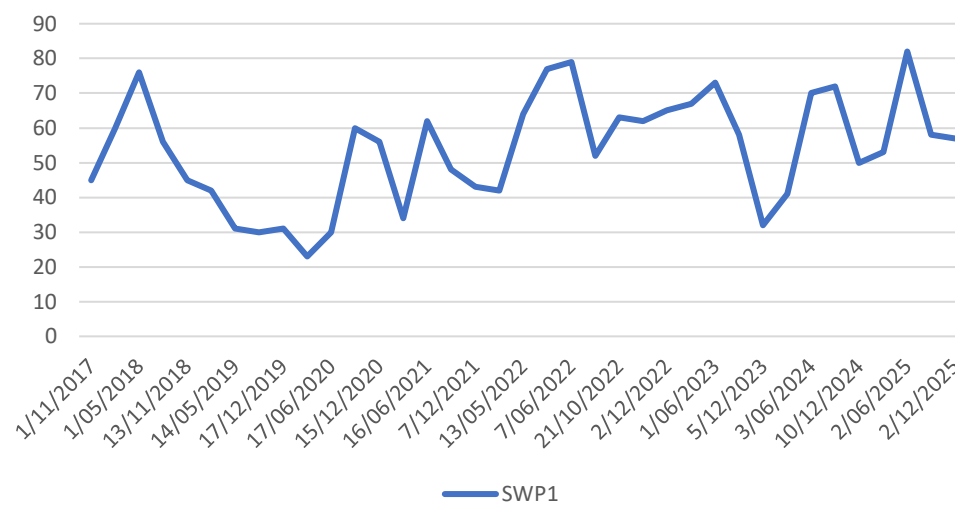


Chart 21: Chloride (mg/L)

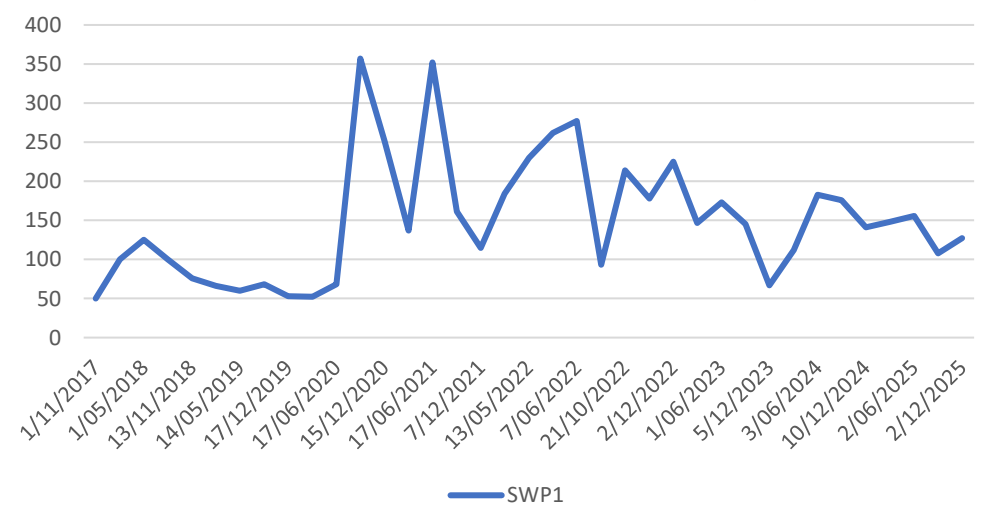


Chart 22: Fluoride (mg/L)

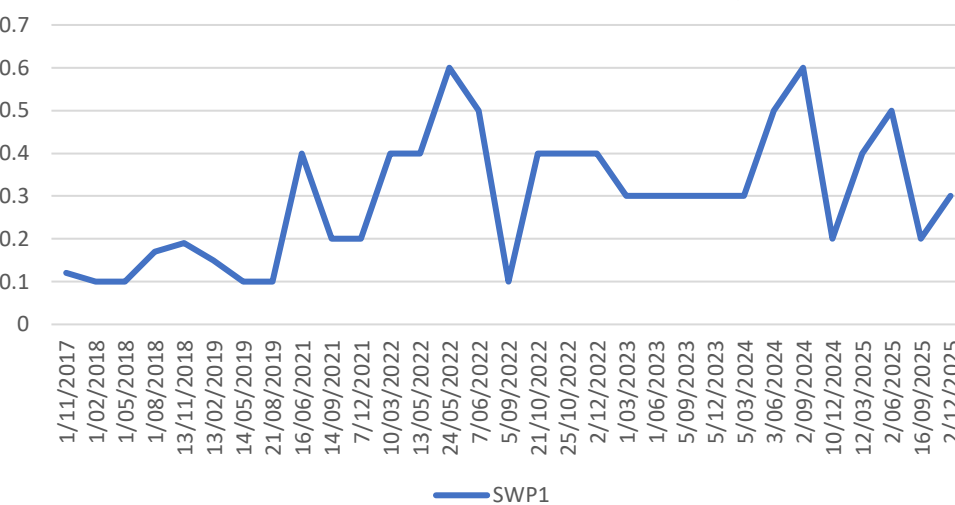


Chart 23: Dissolved Oxygen (mg/L)

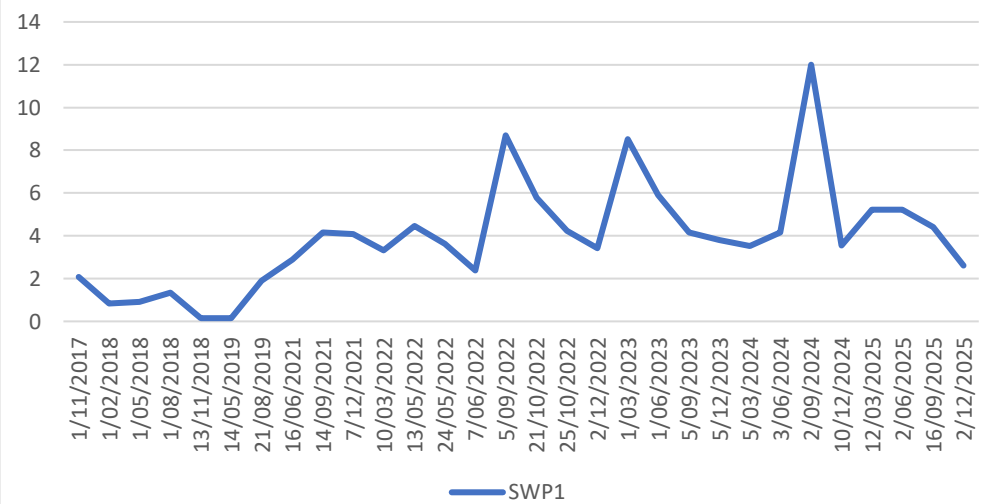


Chart 24: Electrical Conductivity (Us/cm)

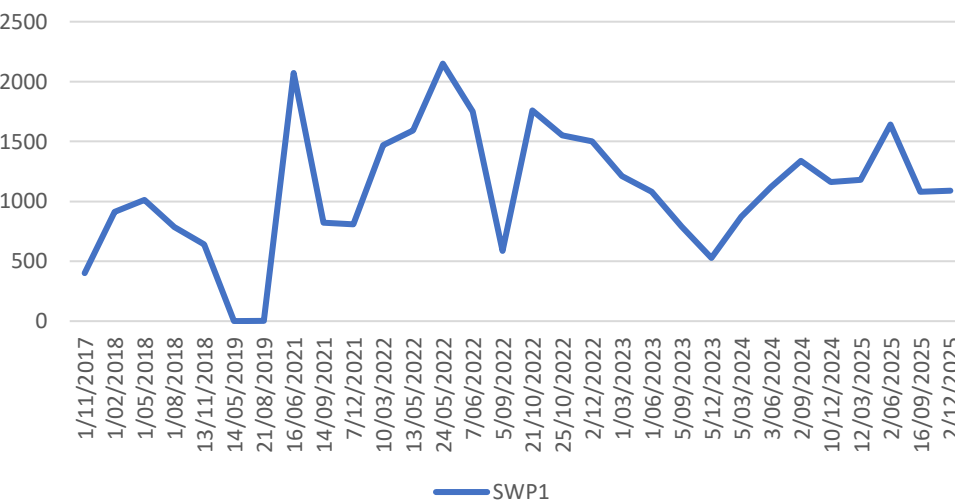


Chart 25: Manganese (mg/L)

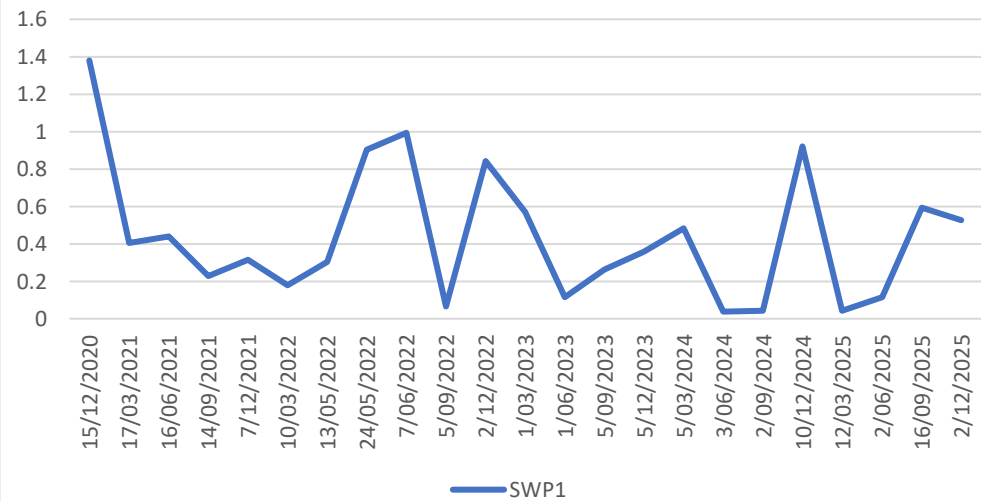
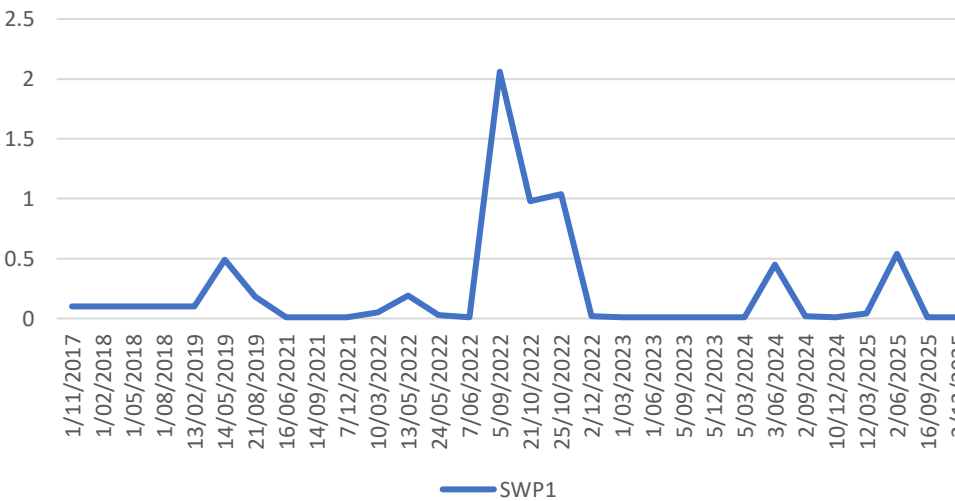
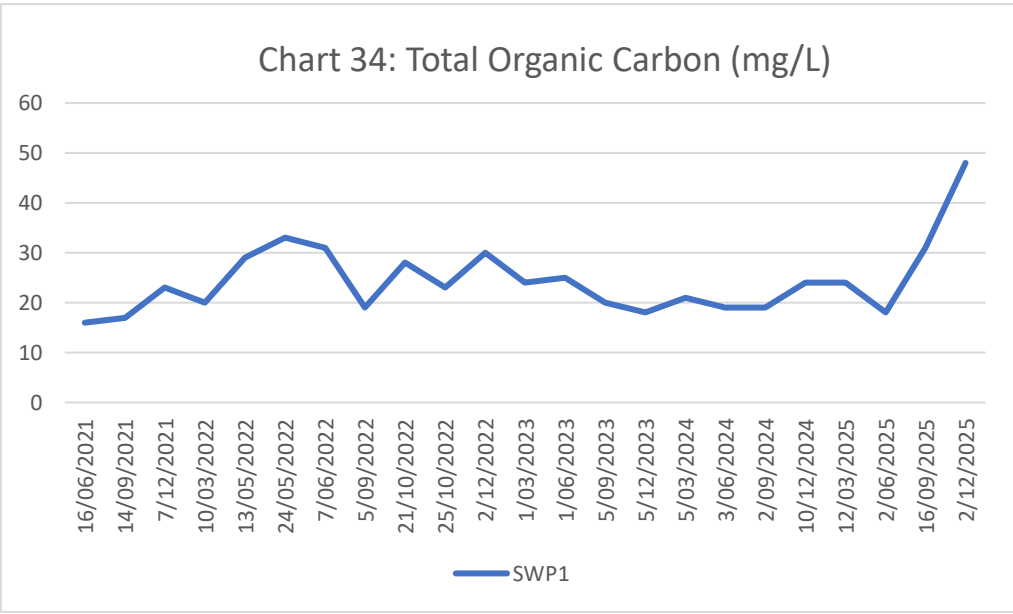
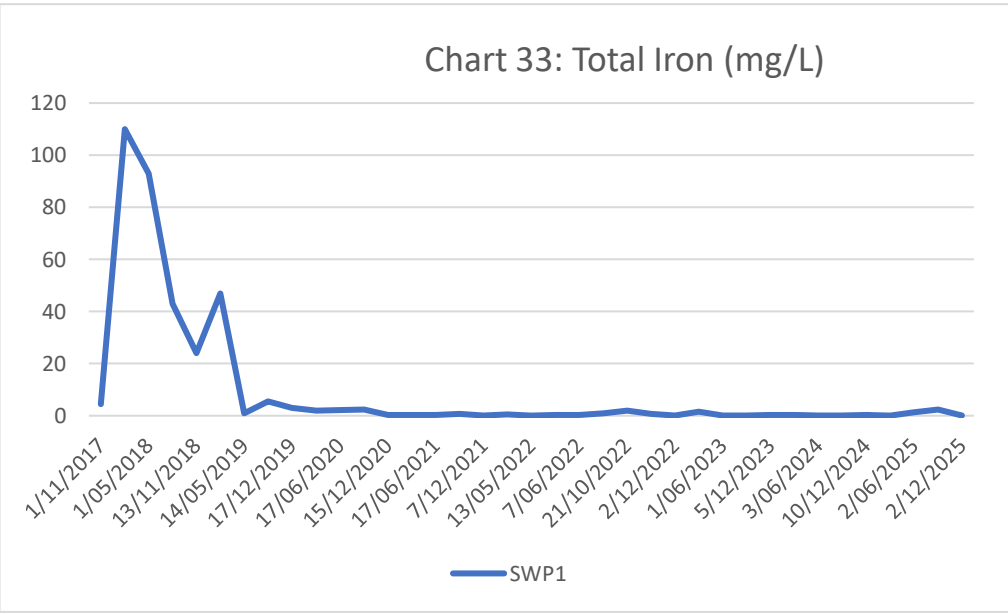
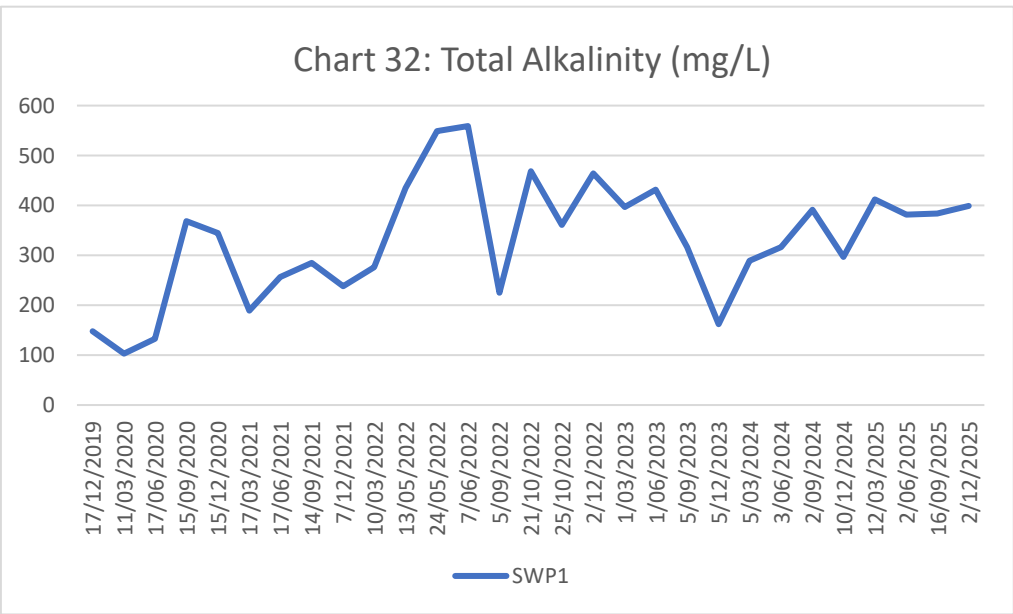
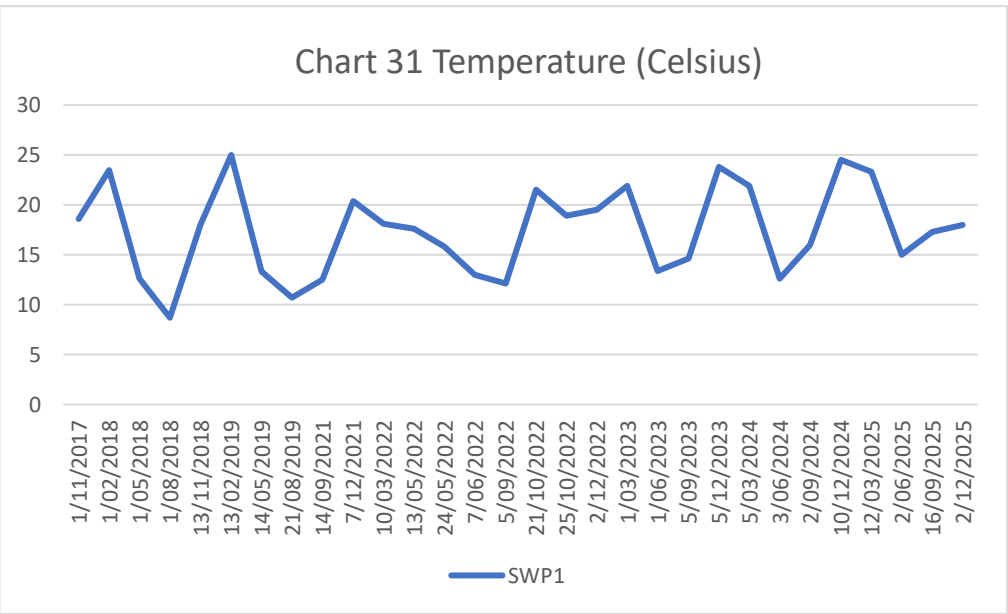
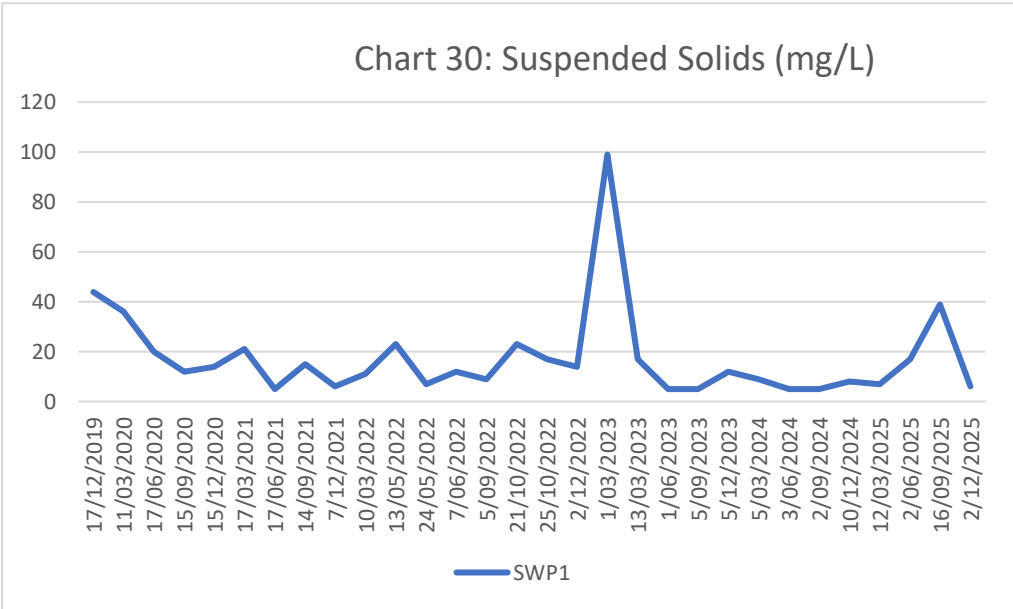
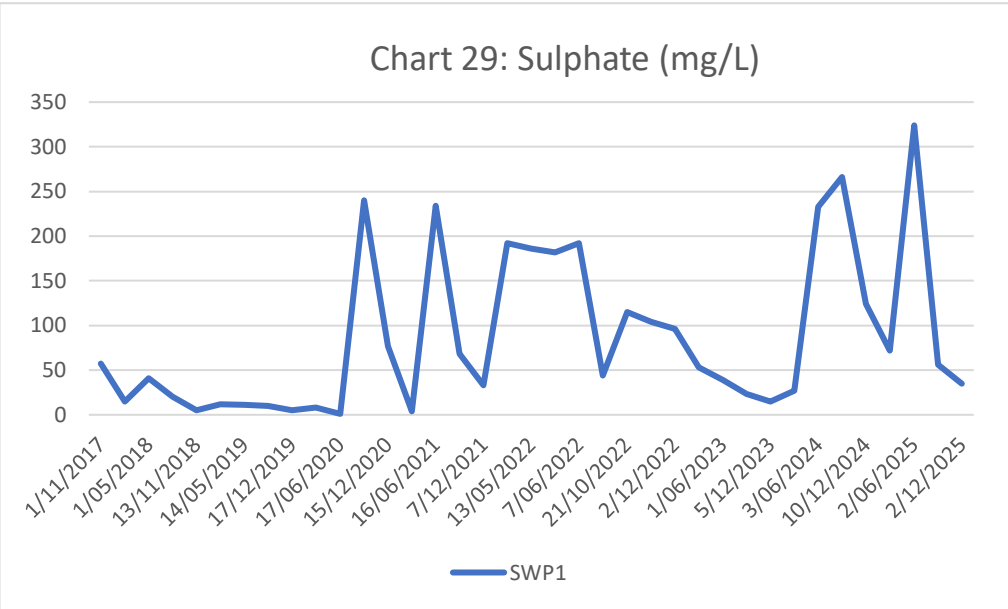
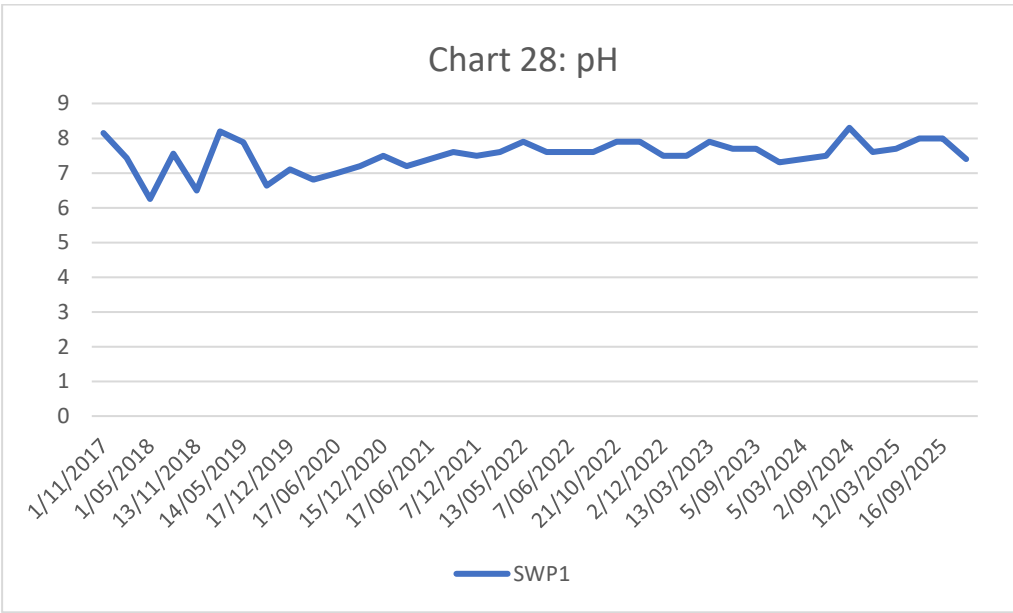
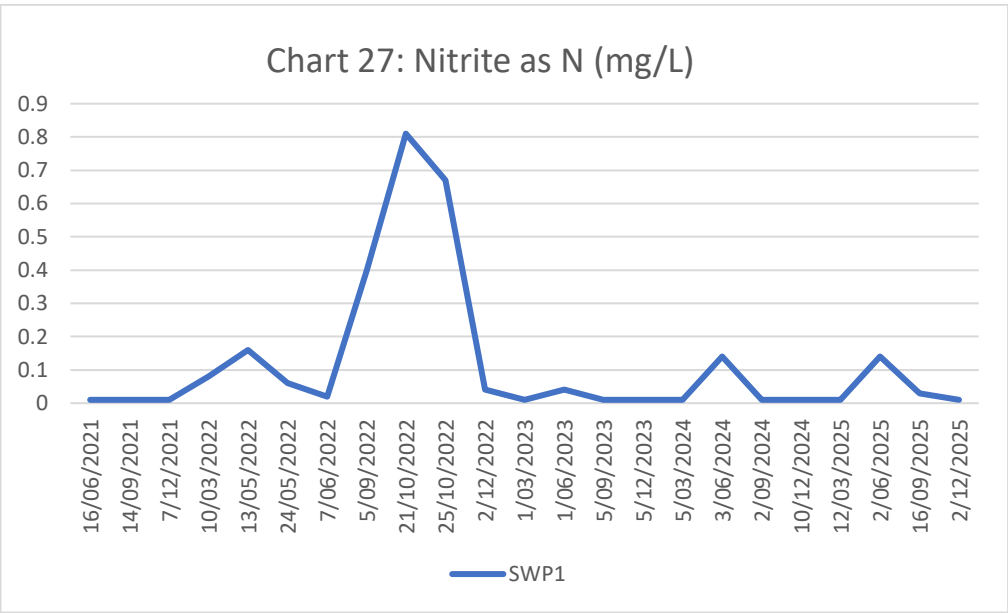


Chart 26: Nitrate as N (mg/L)





Charts 35-46: Rocklow Creek Surface Water Charts

Chart 35: Ammonia as N (mg/L)

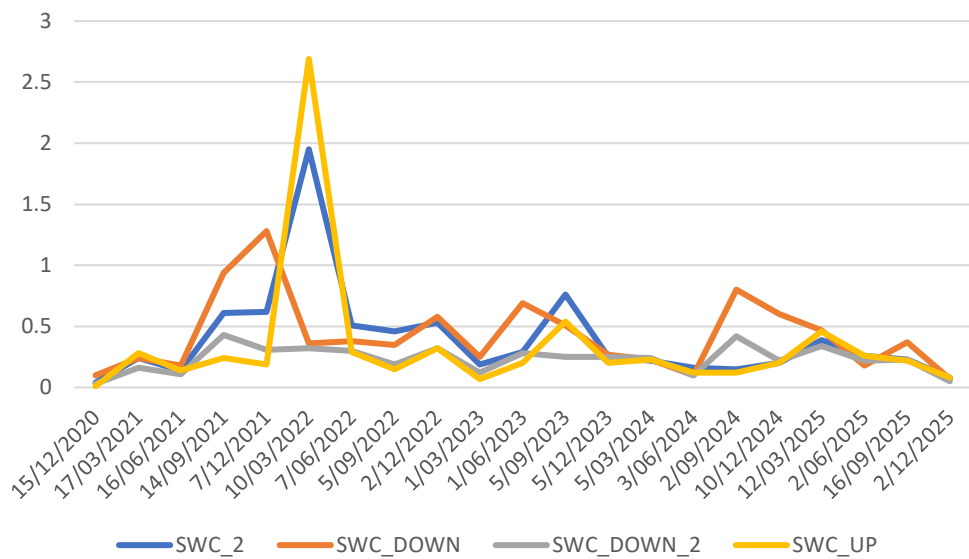


Chart 36: Calcium (mg/L)

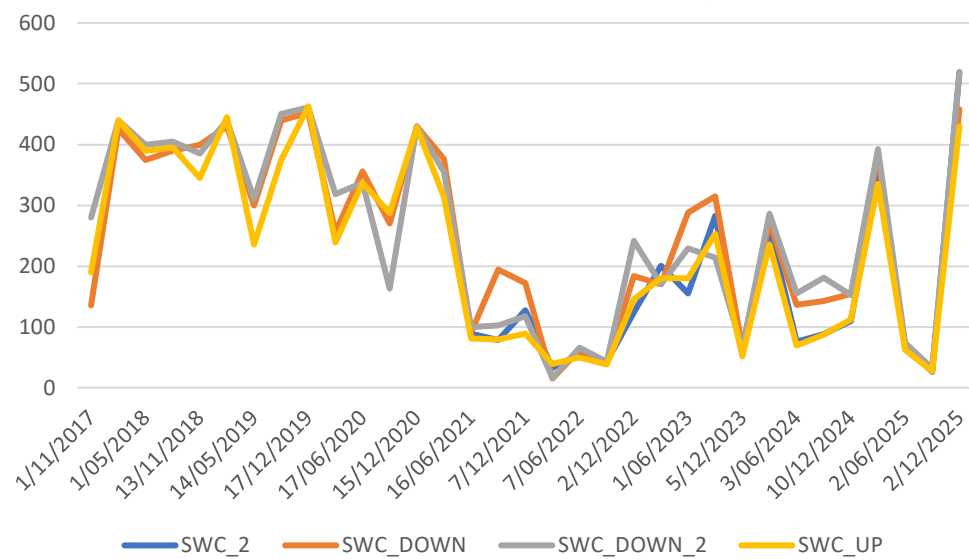


Chart 37: Dissolved Oxygen (mg/L)



Chart 38: Electrical Conductivity (Us/cm)

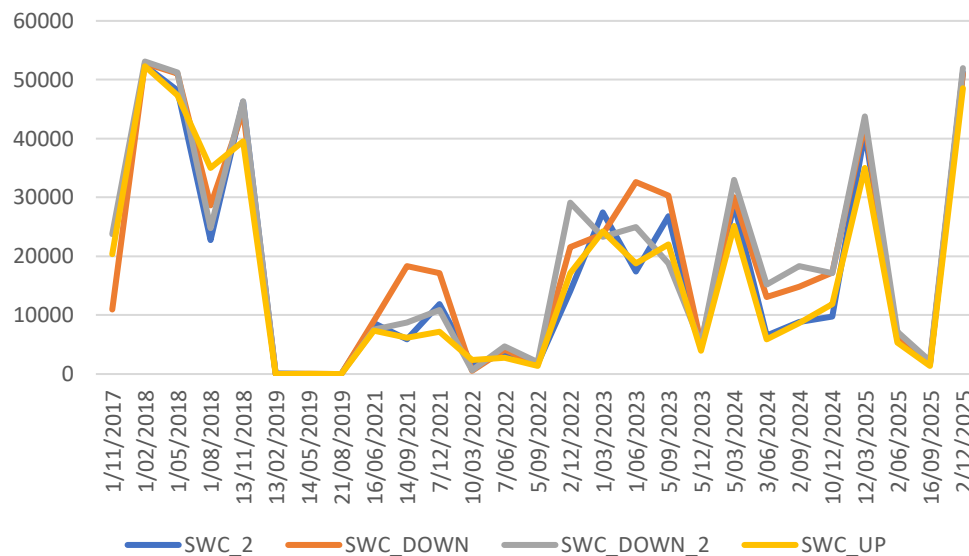


Chart 39: Fluoride (mg/L)

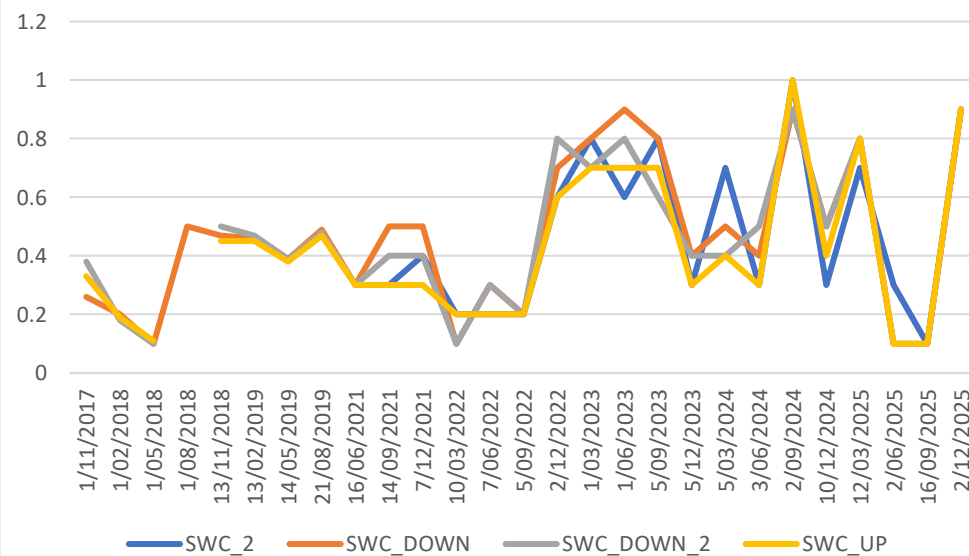


Chart 40: Nitrate as N (mg/L)

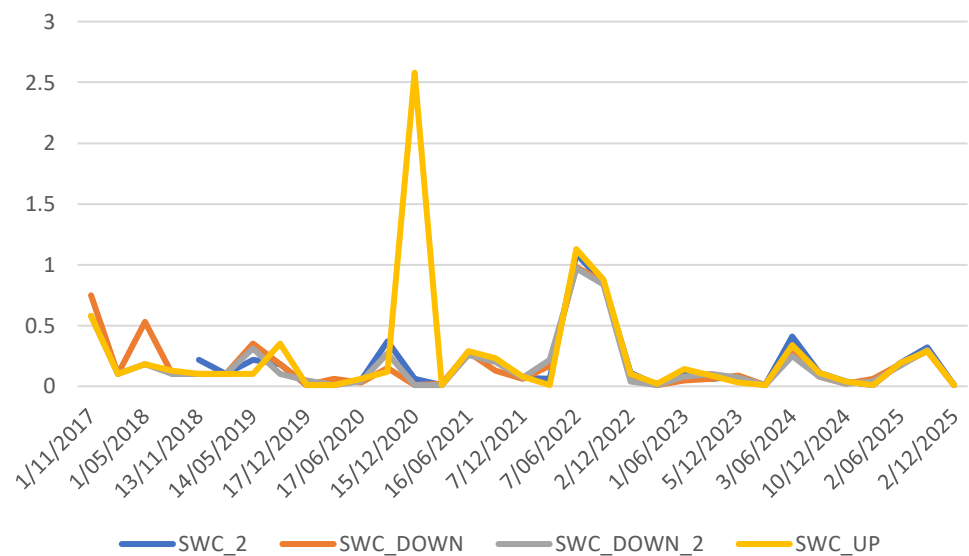


Chart 41: pH

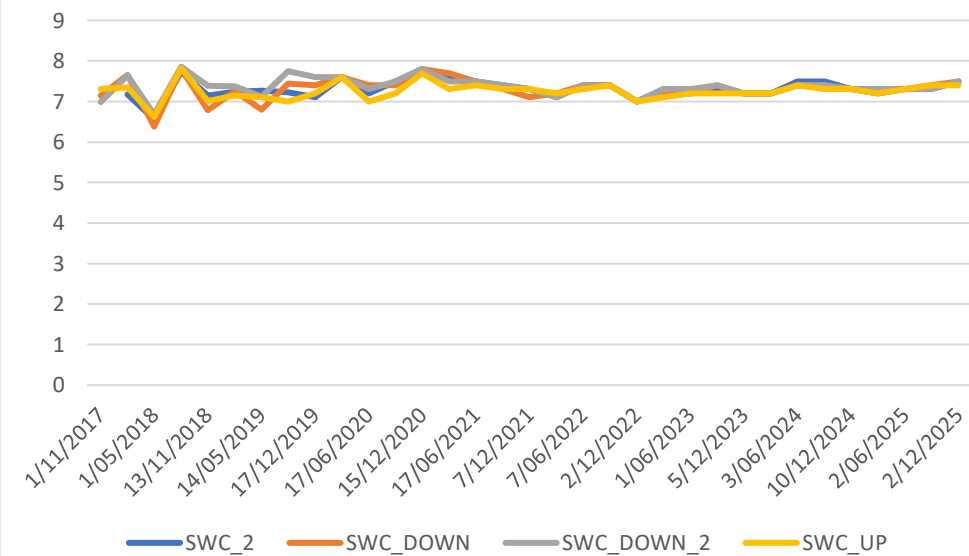
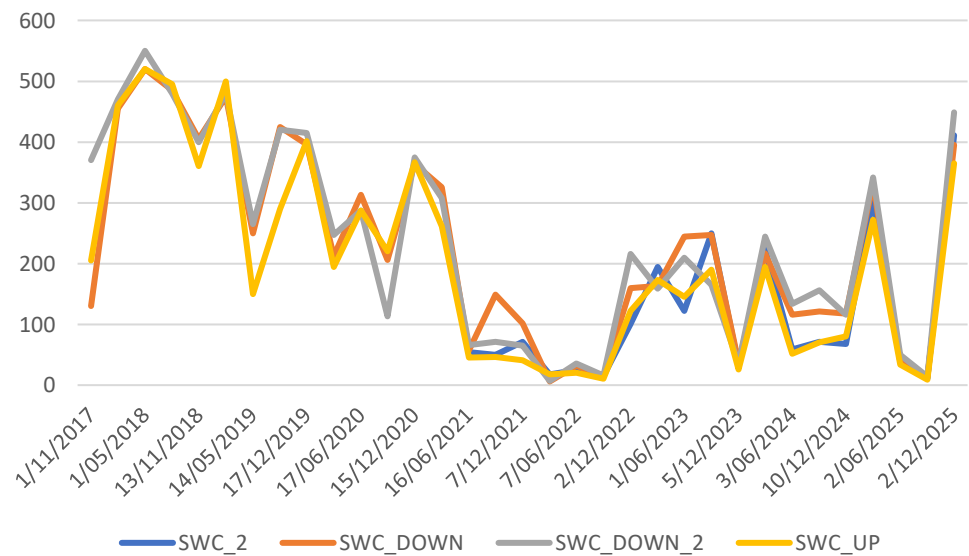
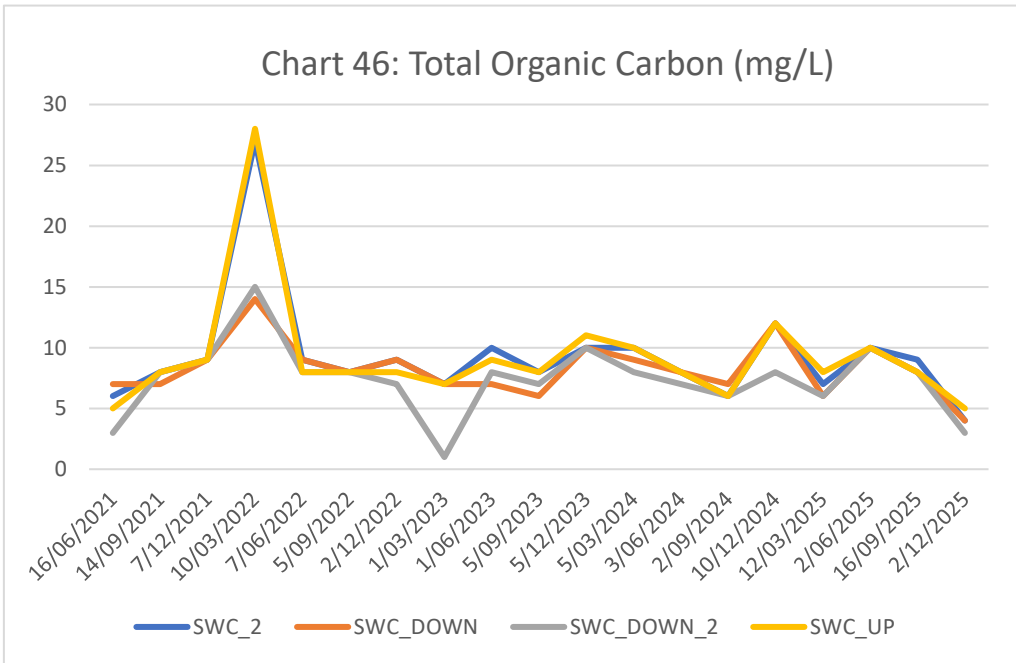
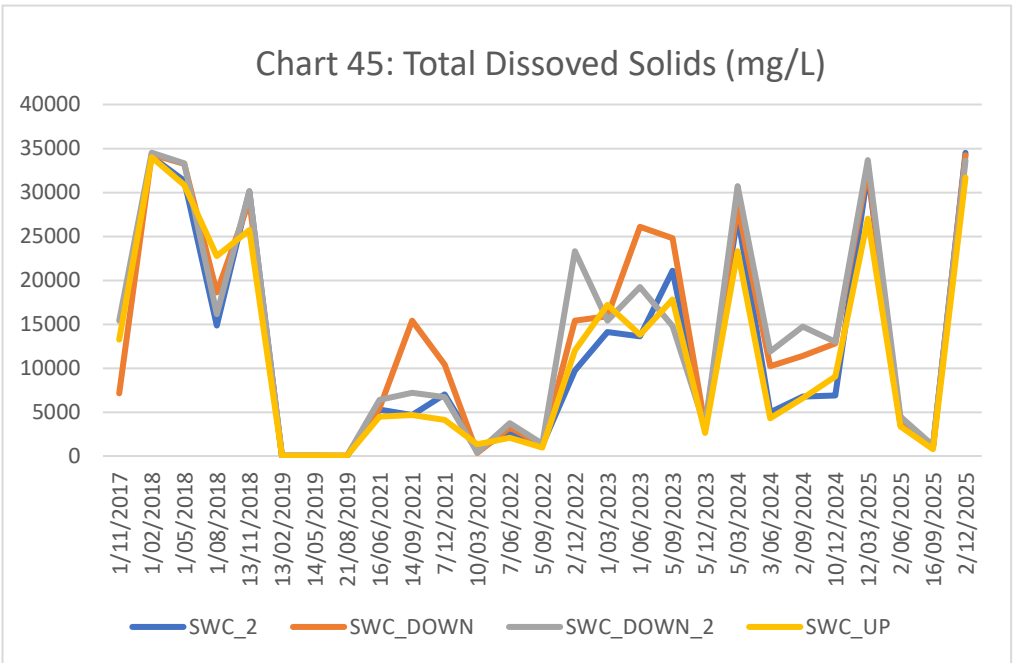
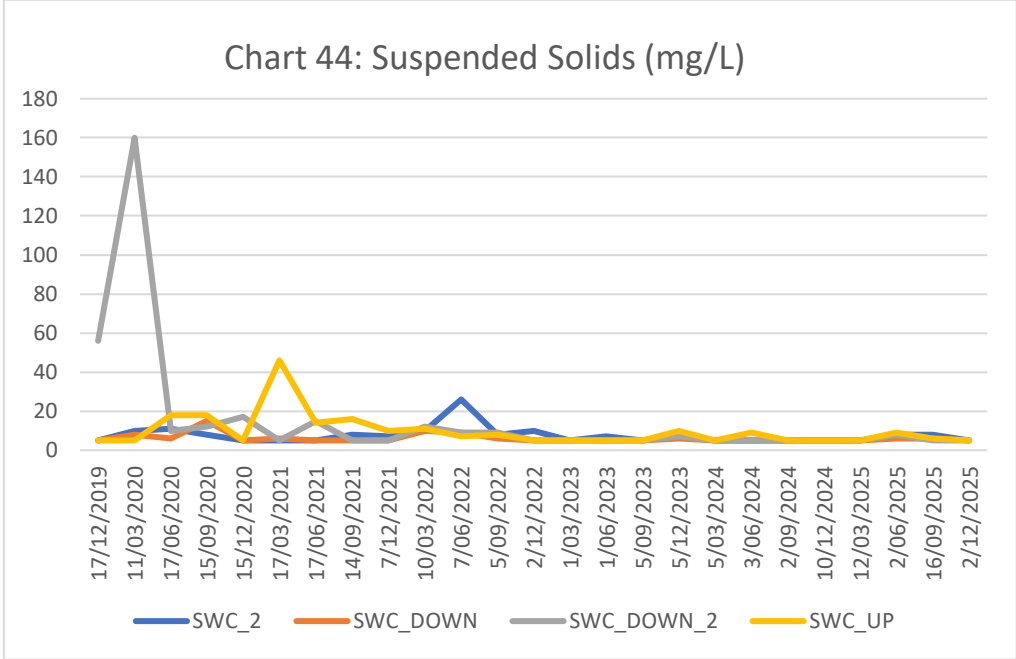
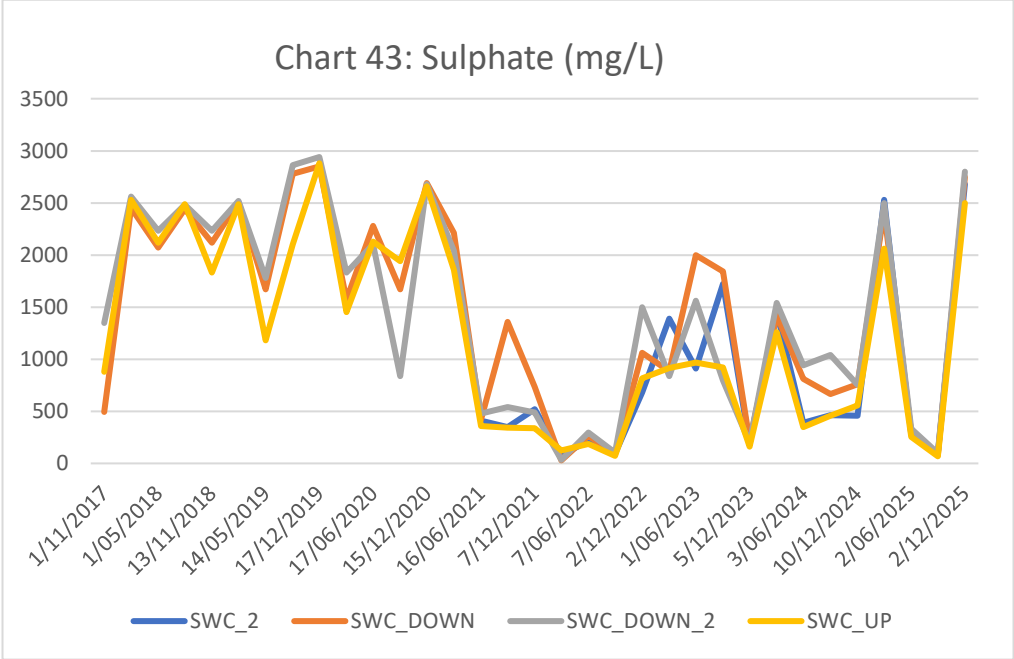


Chart 42: Potassium (mg/L)





Charts 47-61 Leachate Water Quality Charts

Chart 47: Ammonia as N (mg/L)

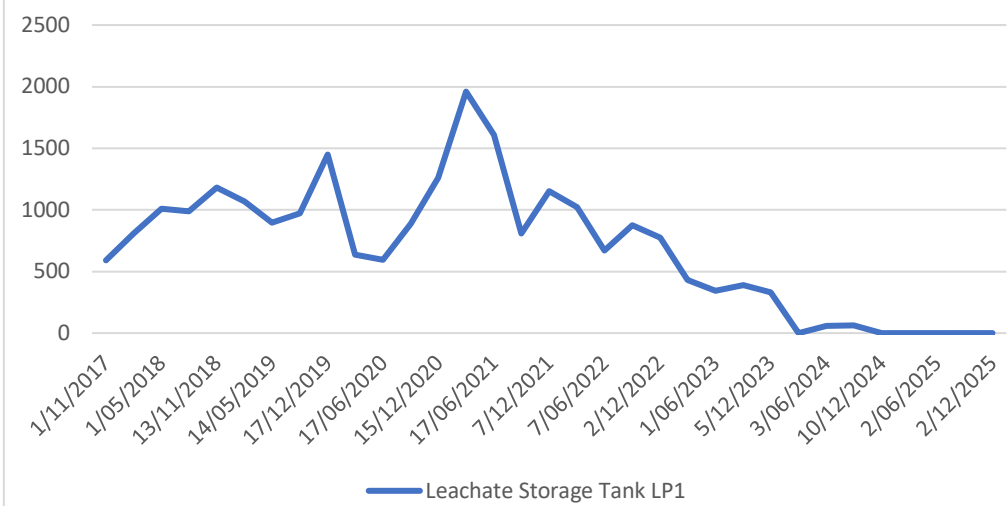


Chart 48: Calcium (mg/L)

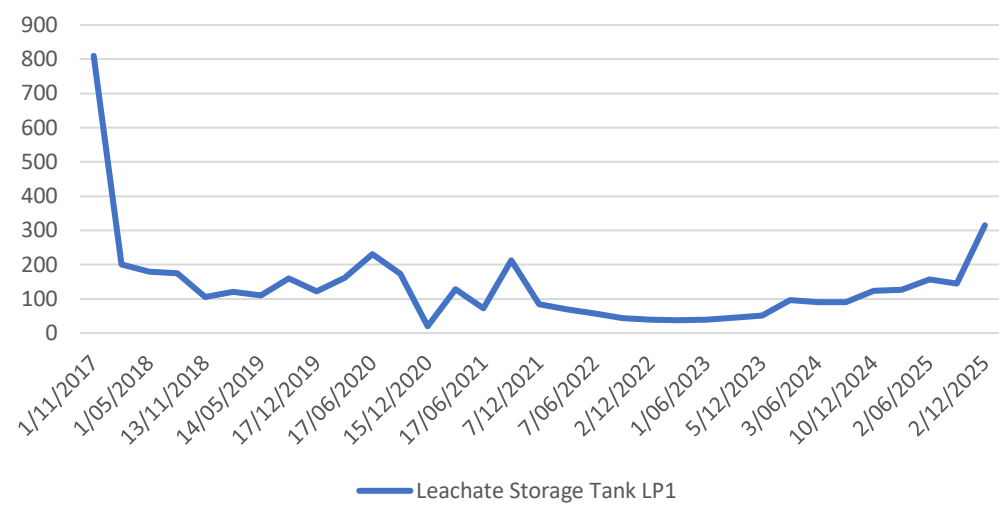


Chart 49: Chloride (mg/L)

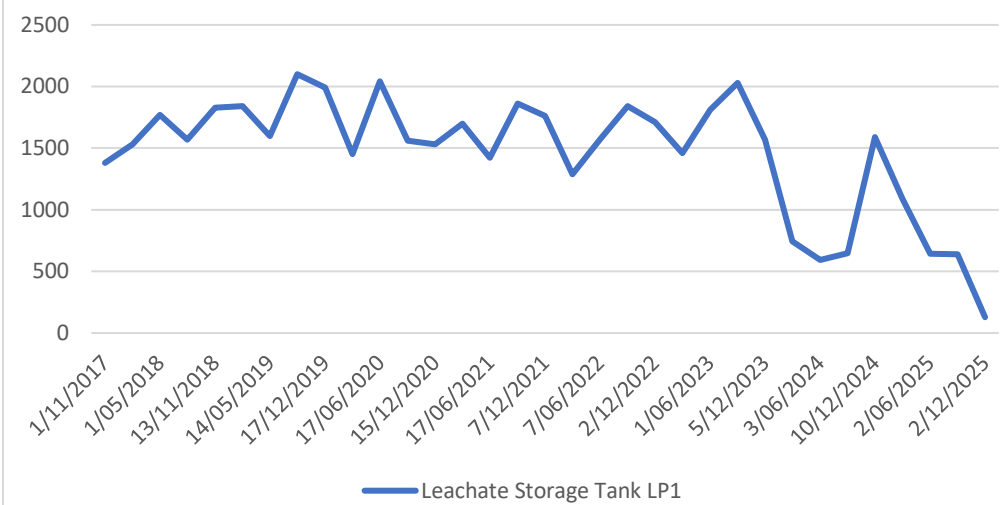


Chart 50: Dissolved Oxygen (mg/L)

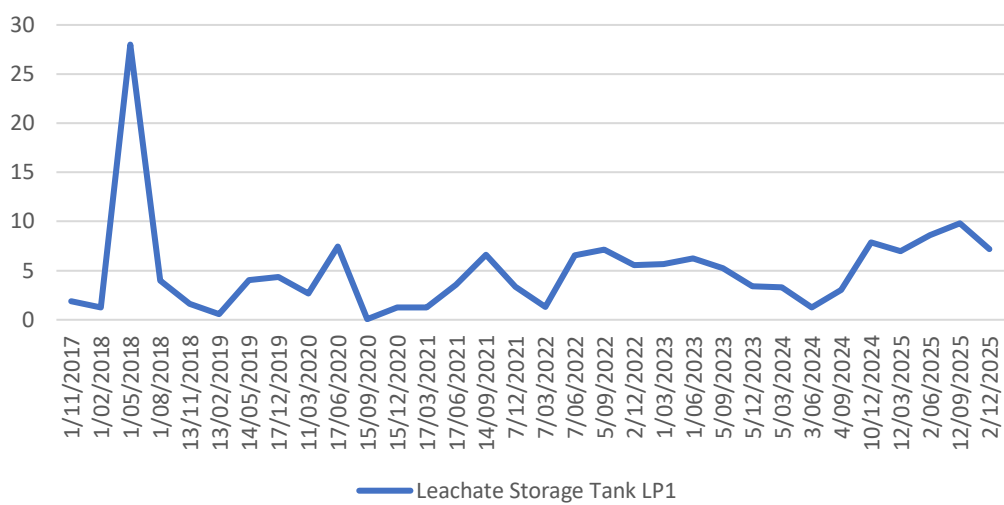


Chart 51: Electrical Conductivity (Us/cm))

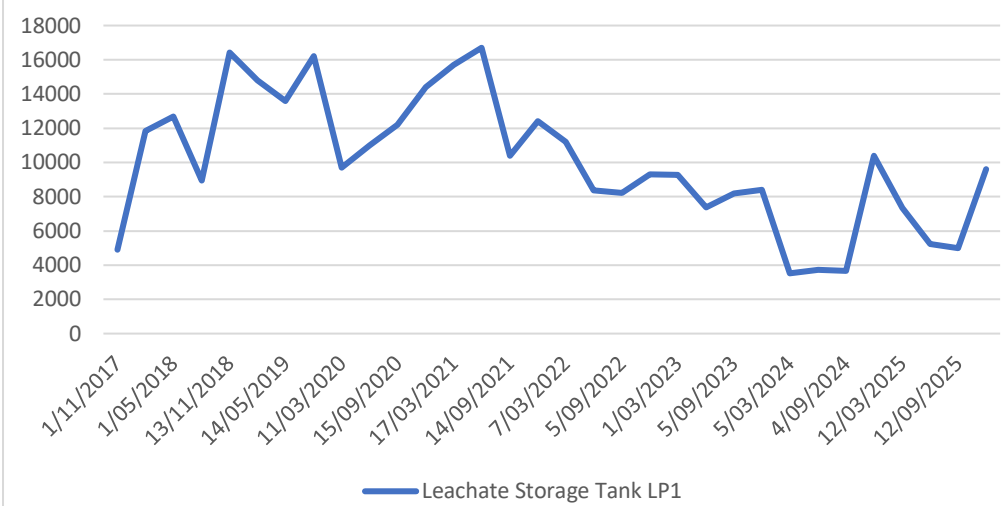


Chart 52: Fluoride (mg/L)

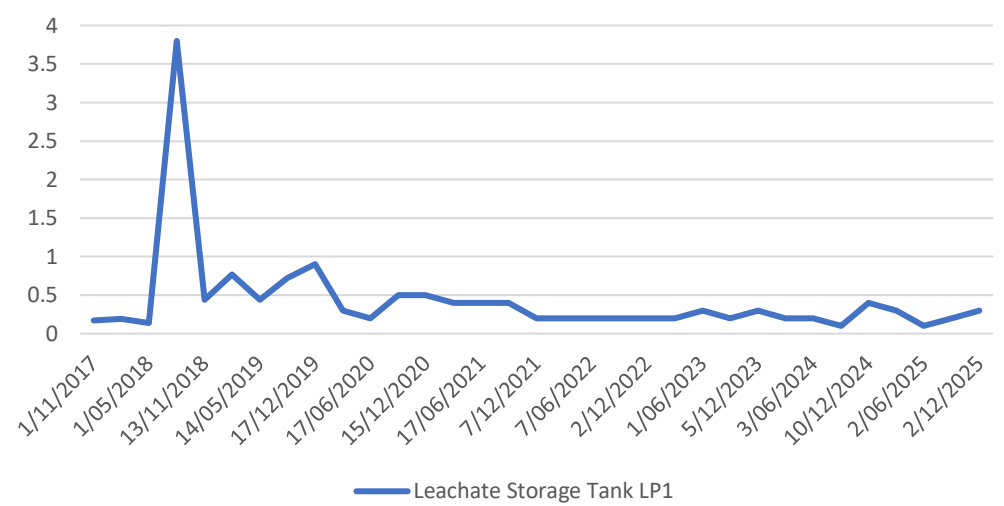


Chart 53: Manganese (mg/L)

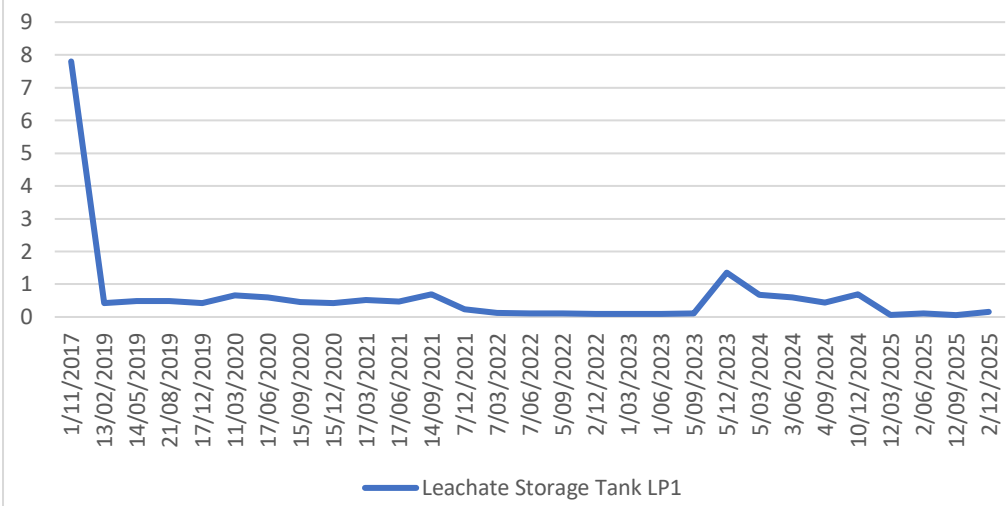
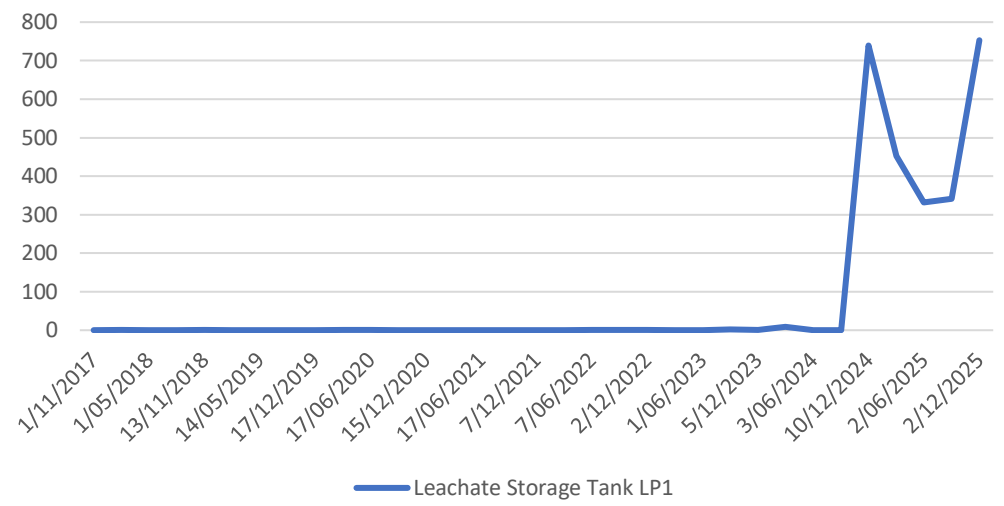
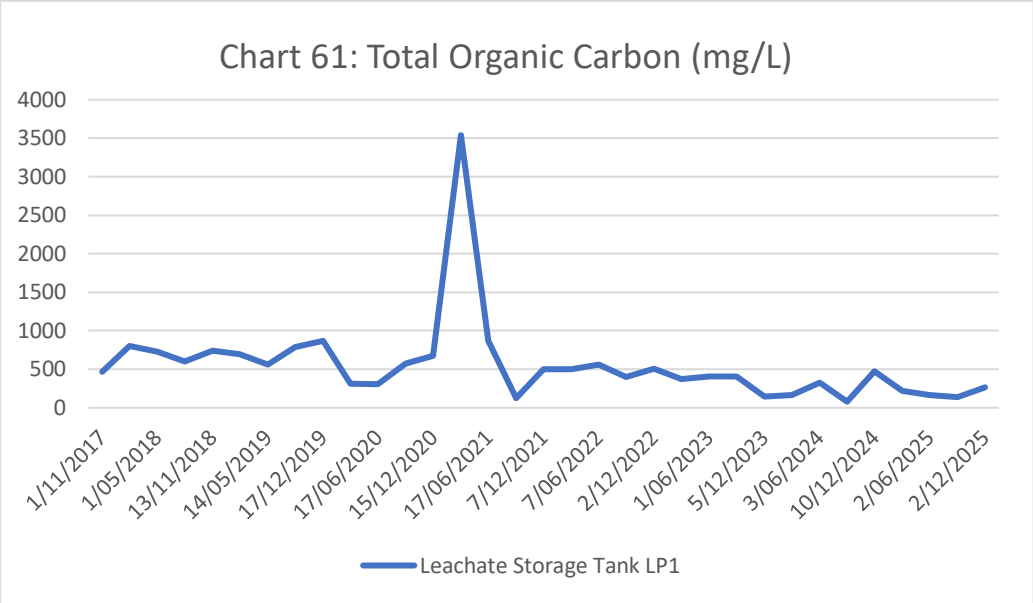
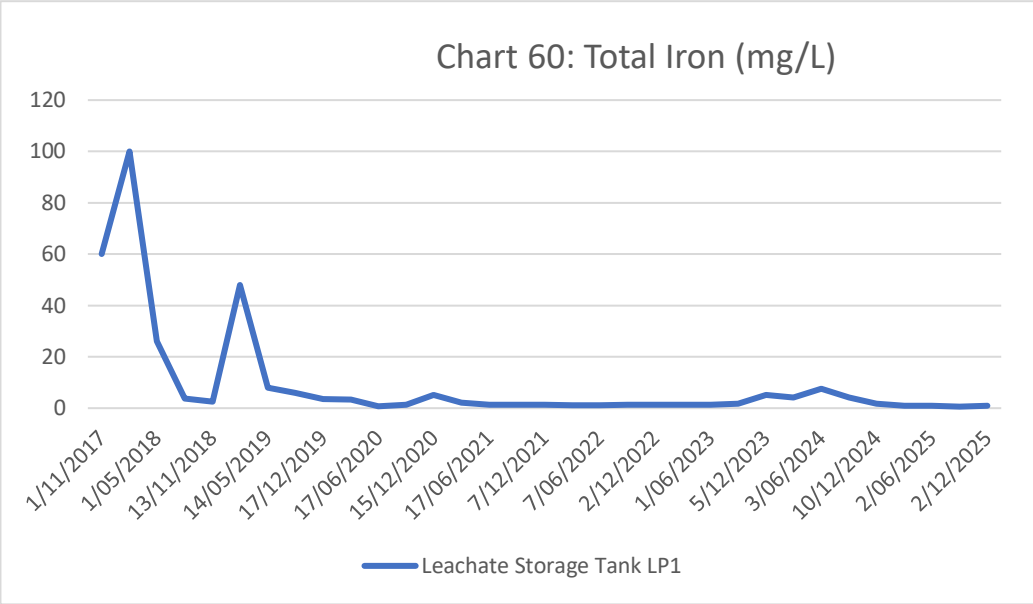
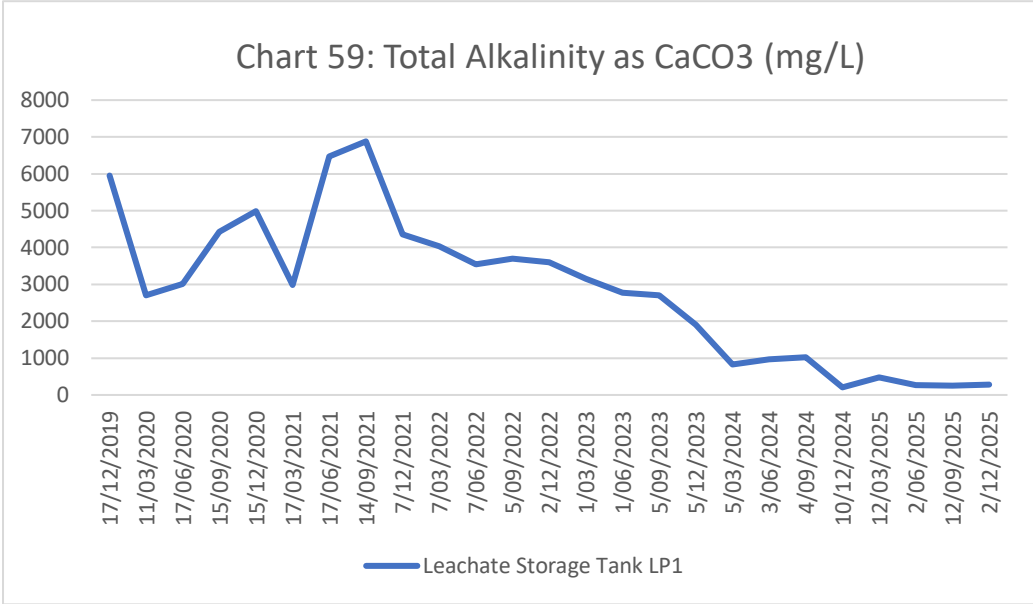
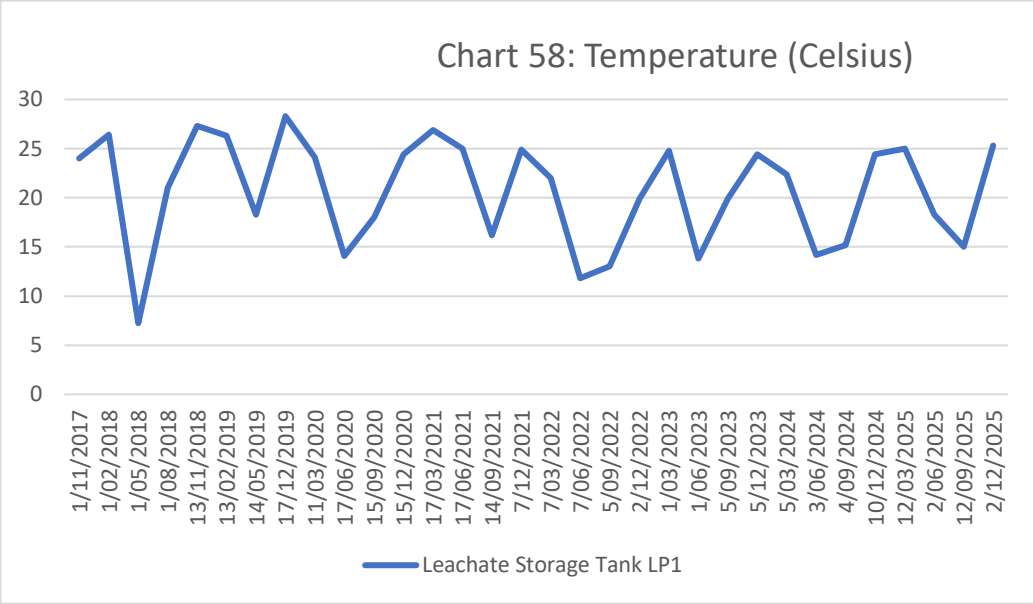
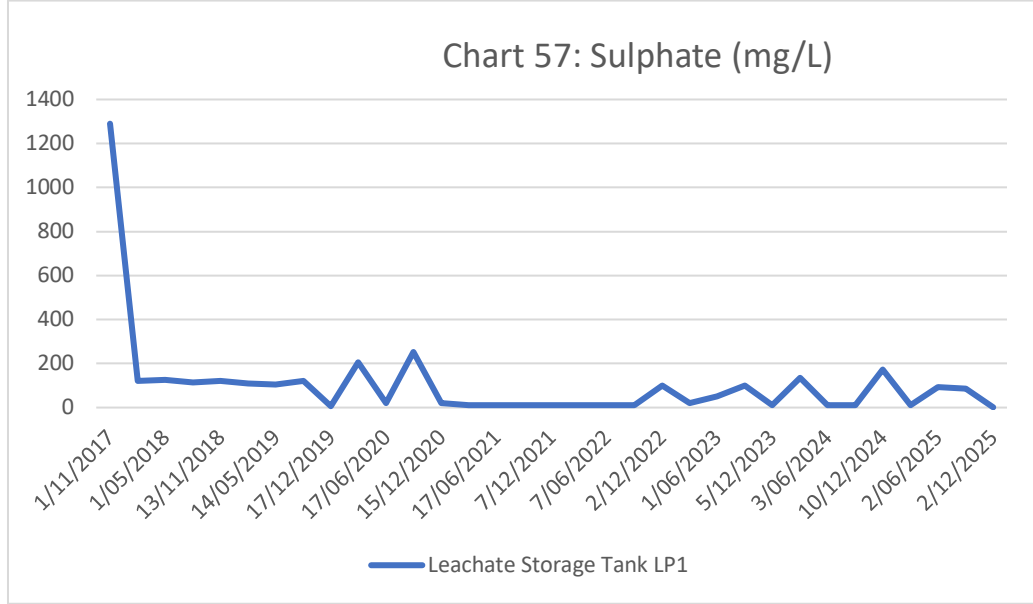
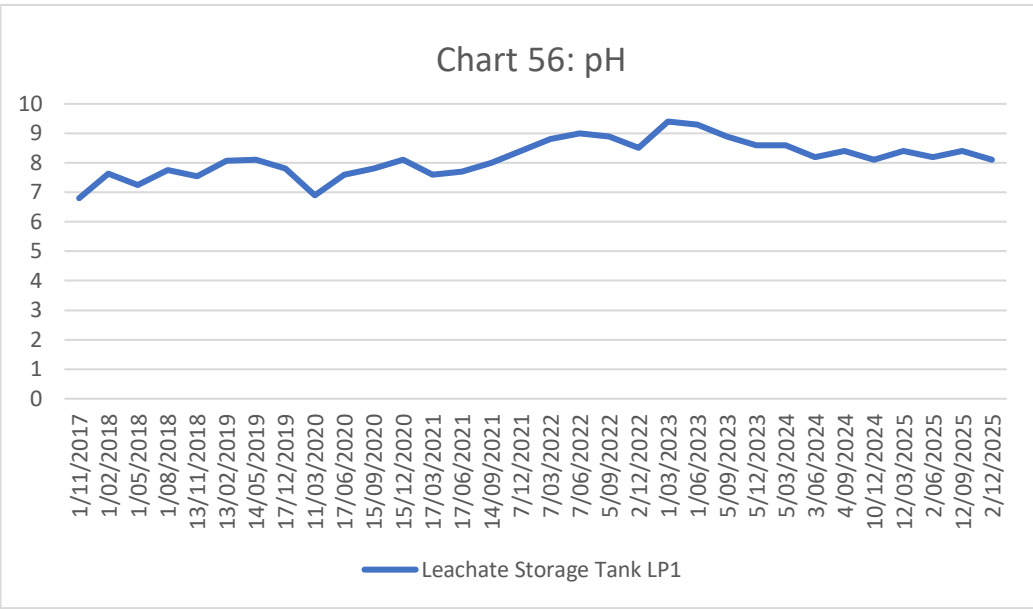
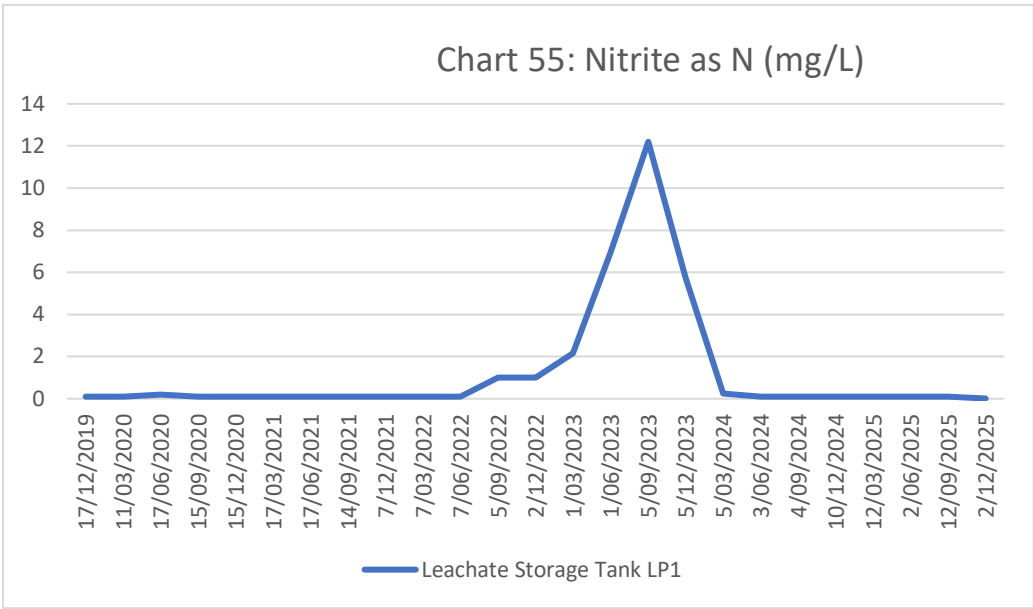


Chart 54: Nitrate as N (mg/L)





APPENDICES

Appendix A:

EPL 5984 Sampling Point Summary (NSW EPA, 10/02/2022. Updated 22/05/2025)

2	Leachate monitoring	Leachate tank labelled LP1 on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
3	Groundwater monitoring	BH1c - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
5	Groundwater monitoring	BH3 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
6	Groundwater monitoring	BH4 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
7	Groundwater monitoring	BH15 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
10	Groundwater monitoring	BH13 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
11	Groundwater monitoring	BH14 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
16	Groundwater monitoring	BH19 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
17	Groundwater monitoring	BH12R - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA

		Ref. no. DOC19/1027702).
18	Groundwater monitoring	BH9 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
19	Surface Water Monitoring	SWC_2 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
20	Surface Water Monitoring	SWC_UP - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
21	Surface Water Monitoring	SWC_DOWN - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
22	Surface Water Monitoring	SWC_DOWN2 - as shown on the drawing titled "Shellharbour City Council - Dunmore, NSW - Site Layout - Figure no. 1" dated July 2019 (EPA Ref. no. DOC19/1027702).
23	Groundwater Monitoring	BH21 - as shown on drawing titled "Monitoring Point Location Plan - Dunmore Recycling and Waste Depot - EPL No. 5984" prepared by Cardno and attached to correspondence dated 7 April 2020 (EPA ref. no. DOC20/317779).
24	Groundwater monitoring	BH22 - as shown on drawing titled "Monitoring Point Location Plan - Dunmore Recycling and Waste Depot - EPL No. 5984" prepared by Cardno and attached to correspondence dated 7 April 2020 (EPA ref. no. DOC20/317779).
25	Groundwater monitoring	BH18 - as shown on drawing titled "Monitoring Point Location Plan - Dunmore Recycling and Waste Depot - EPL No. 5984" prepared by Cardno and attached to correspondence dated 7 April 2020 (EPA ref. no. DOC20/317779).

Appendix B:
Laboratory Chain of Custody (COC) & Certificates of Analysis
(COA) – Water Samples

ENFM (204/17)



CERTIFICATE OF ANALYSIS

Work Order : **EW2505946**
Client : **SHELLHARBOUR CITY COUNCIL**
Contact : Vivienne Morrow
Address : LAMERTON HOUSE, LAMERTON CRESCENT
SHELL HARBOUR CITY CENTRE NSW, AUSTRALIA 2529
Telephone : ----
Project : Dunmore Quarterly Groundwaters EPL
Order number : 174513
C-O-C number : ----
Sampler : Robert DaLio
Site : DUNMORE LANDFILL TENDER
Quote number : EW24SHECIT0001 (RFT 2024/81) Tender V2
No. of samples received : 14
No. of samples analysed : 13

Page : 1 of 8
Laboratory : Environmental Division NSW South Coast
Contact : Aneta Prosaroski
Address : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia
Telephone : 02 42253125
Date Samples Received : 03-Dec-2025 16:00
Date Analysis Commenced : 03-Dec-2025
Issue Date : 12-Dec-2025 15:55



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Robert DaLio	Sampler	Laboratory - Wollongong, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- ED041G: LOR raised for Sulfate due to sample matrix.
- EK059G: LOR raised for NOx due to sample matrix.
- EK057G: LOR raised for Nitrite due to sample matrix.
- ED041G: LOR raised for Sulfate due to sample matrix
- pH performed by ALS Wollongong via in-house method EA005FD and EN67 PK.
- Electrical conductivity performed by ALS Wollongong via in-house method EA010FD and EN67 PK.
- Sampling and groundwater depth measurements completed by ALS Wollongong via inhouse sampling method EN/67.11 Groundwater Sampling High Flow and Bailer Method.
- Temperature performed by ALS Wollongong via in-house method EA116 and EN67 PK.
- All field analysis performed by ALS Wollongong were completed at the time of sampling.
- Sample collection of Ground Waters by in-house EN67 where the "surface layer of the aquifer was sampled".
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BH1C	BH3	BH4	BH9	BH12R
Sampling date / time					03-Dec-2025 09:52	03-Dec-2025 12:25	03-Dec-2025 13:08	03-Dec-2025 09:45	03-Dec-2025 11:40
Compound	CAS Number	LOR	Unit		EW2505946-001	EW2505946-002	EW2505946-003	EW2505946-004	EW2505946-005
					Result	Result	Result	Result	Result
EA005FD: Field pH									
pH	----	0.1	pH Unit		7.0	7.2	7.1	7.2	6.8
EA010FD: Field Conductivity									
Conductivity @ 25oC	----	1	µS/cm		6860	1400	831	2430	1940
EA116: Temperature									
Temperature	----	0.5	°C		25.3	17.9	18.6	18.0	20.6
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		2530	440	339	1160	592
Total Alkalinity as CaCO3	----	1	mg/L		2530	440	339	1160	592
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		<10	132	79	<1	64
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		865	122	24	154	282
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		114	131	100	109	161
Potassium	7440-09-7	1	mg/L		211	42	43	57	27
EG020F: Dissolved Metals by ICP-MS									
Manganese	7439-96-5	0.001	mg/L		0.094	0.157	0.116	0.449	0.468
Iron	7439-89-6	0.05	mg/L		12.3	10.2	3.18	1.01	14.3
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.5	0.2	0.2	0.8	0.6
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		306	12.5	2.69	96.3	5.84
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.10	0.13	<0.01	0.03	0.04
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.10	3.25	<0.01	0.09	0.53



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BH1C	BH3	BH4	BH9	BH12R
Sampling date / time					03-Dec-2025 09:52	03-Dec-2025 12:25	03-Dec-2025 13:08	03-Dec-2025 09:45	03-Dec-2025 11:40
Compound	CAS Number	LOR	Unit		EW2505946-001	EW2505946-002	EW2505946-003	EW2505946-004	EW2505946-005
					Result	Result	Result	Result	Result
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.10	3.38	<0.01	0.12	0.57
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		150	18	9	87	77
QWI-EN 67.11 Sampling of Groundwaters									
Standing Water Level	----	0.01	m AHD		3.32	3.21	4.41	3.38	4.38



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BH13	BH14	BH15	BH19R	BH18
Sampling date / time				03-Dec-2025 11:58	03-Dec-2025 13:25	03-Dec-2025 11:20	03-Dec-2025 12:47	03-Dec-2025 09:00
Compound	CAS Number	LOR	Unit	EW2505946-006	EW2505946-007	EW2505946-008	EW2505946-009	EW2505946-010
				Result	Result	Result	Result	Result
EA005FD: Field pH								
pH	----	0.1	pH Unit	6.9	6.9	7.0	7.4	6.8
EA010FD: Field Conductivity								
Conductivity @ 25oC	----	1	µS/cm	2260	1460	1340	752	324
EA116: Temperature								
Temperature	----	0.5	°C	22.0	20.9	18.8	18.1	19.2
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	771	442	303	327	166
Total Alkalinity as CaCO3	----	1	mg/L	771	442	303	327	166
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	62	130	250	45	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	306	155	112	28	12
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	154	132	84	83	38
Potassium	7440-09-7	1	mg/L	22	17	71	57	6
EG020F: Dissolved Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	0.571	0.210	0.200	0.059	0.076
Iron	7439-89-6	0.05	mg/L	3.91	4.51	5.21	0.82	1.01
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.5	1.1	0.3	0.2	0.2
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	11.6	1.93	4.72	1.03	0.66
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.31	0.02	0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	4.25	2.03	0.27	0.02	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BH13	BH14	BH15	BH19R	BH18
Sampling date / time					03-Dec-2025 11:58	03-Dec-2025 13:25	03-Dec-2025 11:20	03-Dec-2025 12:47	03-Dec-2025 09:00
Compound	CAS Number	LOR	Unit		EW2505946-006	EW2505946-007	EW2505946-008	EW2505946-009	EW2505946-010
					Result	Result	Result	Result	Result
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		4.30	2.34	0.29	0.03	<0.01
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		45	22	19	12	10
QWI-EN 67.11 Sampling of Groundwaters									
Standing Water Level	----	0.01	m AHD		4.38	4.85	0.80	4.59	2.41



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BH21	BH22	Duplicate	----	----
Sampling date / time					03-Dec-2025 10:21	03-Dec-2025 10:40	03-Dec-2025 09:00	----	----
Compound	CAS Number	LOR	Unit		EW2505946-011	EW2505946-012	EW2505946-013	-----	-----
					Result	Result	Result	----	----
EA005FD: Field pH									
pH	----	0.1	pH Unit		7.2	7.1	6.8	----	----
EA010FD: Field Conductivity									
Conductivity @ 25oC	----	1	µS/cm		2510	1780	324	----	----
EA116: Temperature									
Temperature	----	0.5	°C		22.2	18.8	19.2	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		789	504	166	----	----
Total Alkalinity as CaCO3	----	1	mg/L		789	504	166	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		258	170	<1	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		312	216	12	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		132	81	37	----	----
Potassium	7440-09-7	1	mg/L		15	15	6	----	----
EG020F: Dissolved Metals by ICP-MS									
Manganese	7439-96-5	0.001	mg/L		0.619	0.100	0.074	----	----
Iron	7439-89-6	0.05	mg/L		0.16	7.36	1.01	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.4	0.5	0.2	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		4.62	7.76	0.63	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.04	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BH21	BH22	Duplicate	----	----
Sampling date / time					03-Dec-2025 10:21	03-Dec-2025 10:40	03-Dec-2025 09:00	----	----
Compound	CAS Number	LOR	Unit		EW2505946-011	EW2505946-012	EW2505946-013	-----	-----
					Result	Result	Result	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.04	<0.01	<0.01	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		36	36	10	----	----
QWI-EN 67.11 Sampling of Groundwaters									
Standing Water Level	----	0.01	m AHD		3.32	2.67	2.41	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry / Biology).

(WATER) ED093F: Dissolved Major Cations

(WATER) EP005: Total Organic Carbon (TOC)

(WATER) EK055G: Ammonia as N by Discrete Analyser

(WATER) EK057G: Nitrite as N by Discrete Analyser

(WATER) EK058G: Nitrate as N by Discrete Analyser

(WATER) EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser



(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) ED045G: Chloride by Discrete Analyser

(WATER) ED037P: Alkalinity by PC Titrator

(WATER) EK040P: Fluoride by PC Titrator

(WATER) ED041G: Sulfate (Turbidimetric) as SO4 2- by DA

Mandatory Fields				CHAIN OF CUSTODY												Page ____ of ____															
CLIENT CODE: SHECIT		*PROJECT MANAGER: Vivienne Morrow		SAMPLER: SAMPLED BY ALS								CoC #: (if applicable)																			
*CLIENT: Shellharbour City Council		*PM MOBILE:		SAMPLER MOBILE: 02 4225 3125																											
OFFICE: (Invoiced Office) Shellharbour		ALS QUOTE # (Client PL if blank) WO/030/19 TENDER		PURCHASE ORDER NO.: 156810																											
PROJECT NO./PROJECT: Dunmore Quarterly Surface Waters EPL				SITE: Dunmore																											
*INVOICE TO: Financial@shellharbour.nsw.gov.au (client default if nil)														<input type="checkbox"/> CC Invoice to PM		BIOSECURITY Country of Origin: (if not Australia) Environmental Division Wollongong Work Order Reference EW2505944  Telephone: 02 42253125															
*EMAIL REPORTS TO: (default to PM if blank) Ryan.stirlingshellharbour.nsw.gov.au, Glenn.holdenshellharbour.nsw.gov.au, Mitchell.copasshellharbour.nsw.gov.au, lab@enrs.com.au, vivienne.morrow@shellharbour.nsw.gov.au				*ANALYSIS REQUIRED <small>(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.</small>																											
* STORAGE REQUIREMENTS <small>Please check box.</small> → Standard Storage time from receipt of samples: Waters - 3 weeks Soils - 2 months <input type="checkbox"/> Standard Storage <input type="checkbox"/> Extended Storage Specify Disposal Date: <small>Note: Extended storage incurs a fee and requires a signed agreement.</small>				* TURNAROUND <small>Please check box.</small> → (Not all tests can be expedited, contact Client Services for more information) <input type="checkbox"/> 5+ days (no surcharge) <input type="checkbox"/> 3 day (+15%) <input type="checkbox"/> 2 day (+30%) <input type="checkbox"/> 1 day (+50%)																											
Comments:				MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>TSS</td> <td>NT-1, NT-2A (Ionic Balance)</td> <td>TOC, NT-4, NH3, Total Mn</td> <td>Dissolved and Total Fe</td> <td>Turbidity</td> <td>NH3, NH4 & NO3</td> <td>TSS, TDS, TOC, Total Mn</td> <td>Field Test pH, EC, DO & Temp</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>								TSS	NT-1, NT-2A (Ionic Balance)			TOC, NT-4, NH3, Total Mn	Dissolved and Total Fe	Turbidity	NH3, NH4 & NO3	TSS, TDS, TOC, Total Mn	Field Test pH, EC, DO & Temp								
														TSS	NT-1, NT-2A (Ionic Balance)			TOC, NT-4, NH3, Total Mn	Dissolved and Total Fe	Turbidity	NH3, NH4 & NO3	TSS, TDS, TOC, Total Mn	Field Test pH, EC, DO & Temp								
ALS Use Only	Sample ID	Depth	Date/Time	No. Bottles													Lab QC (additional bottles req.)		Additional Information (Comment on hazards - e.g., asbestos, known high contamination)												
Lab ID																	Dup	MS													
	SWP1		2-12-25 10:12	4		X	X	X	X	X			X					<input type="checkbox"/>	<input type="checkbox"/>												
	SWC_2		11:25				X		X		X	X	X					<input type="checkbox"/>	<input type="checkbox"/>												
	SWC_UP		11:42				X		X	X	X	X	X					<input type="checkbox"/>	<input type="checkbox"/>												
	SWC_DOWN		12:05				X		X	X	X	X	X					<input type="checkbox"/>	<input type="checkbox"/>												
	SWC_DOWN_2		12:12				X		X	X	X	X	X					<input type="checkbox"/>	<input type="checkbox"/>												
	Duplicate		11:25				X		X	X	X	X	X					<input type="checkbox"/>	<input type="checkbox"/>												
																		<input type="checkbox"/>	<input type="checkbox"/>												
																		<input type="checkbox"/>	<input type="checkbox"/>												
																		<input type="checkbox"/>	<input type="checkbox"/>												
																		<input type="checkbox"/>	<input type="checkbox"/>												
Receipt Detail (Lab Use ONLY)		Chilling Method: Frozen / Melted Ice: Frozen / Thawed Ice Bricks: None		Sample Temp at Receipt: 4.8 °C 4.2 °C 4.3 °C	Security Seal Intact (circle) Yes / No NA(None)		Carrier Details: <input type="checkbox"/> Courier/Post Can Note #		Packaging: (Circle) Count: # 1		Hard Esy: # 1 Foam Esy: # Box/Bag/Other: #																				
Relinquished by: Robert Dehio		Signature: [Signature]		Date/Time: 2-12-25	Received by: Aneta		Signature: [Signature]		Date/Time: 21/2/25																						
Relinquished by:		Signature:		Date/Time:	Received by:		Signature:		Date/Time:																						



CERTIFICATE OF ANALYSIS

Work Order : **EW2505944**
Client : **SHELLHARBOUR CITY COUNCIL**
Contact : Vivienne Morrow
Address : LAMERTON HOUSE, LAMERTON CRESCENT
SHELL HARBOUR CITY CENTRE NSW, AUSTRALIA 2529
Telephone : ----
Project : Dunmore Quarterly Surface Water EPL
Order number : 174513
C-O-C number : ----
Sampler : Robert DaLio
Site : DUNMORE LANDFILL TENDER
Quote number : EW24SHECIT0001 (RFT 2024/81) Tender V2
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 7
Laboratory : Environmental Division NSW South Coast
Contact : Aneta Prosaroski
Address : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia
Telephone : 02 42253125
Date Samples Received : 02-Dec-2025 13:59
Date Analysis Commenced : 02-Dec-2025
Issue Date : 12-Dec-2025 13:37



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Robert DaLio	Sampler	Laboratory - Wollongong, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- EG020A: LORs have been raised for some samples due to matrix interference (High sample salinity)
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- pH performed by ALS Wollongong via in-house method EA005FD and EN67 PK.
- Electrical conductivity performed by ALS Wollongong via in-house method EA010FD and EN67 PK.
- Sampling completed by ALS Wollongong in accordance with in-house sampling method EN/67.6 Rivers and Streams.
- Temperature performed by ALS Wollongong via in-house method EA116 and EN67 PK.
- Dissolved oxygen (DO) performed by ALS Wollongong via in-house method EP025FD and EN67 PK.
- All field analysis performed by ALS Wollongong were completed at the time of sampling.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SWP1 Point 1	SWC_2 Point 19	SWC_UP Point 20	SWC_Down Point 21	SWC_DOWN_2 Point 22
Sampling date / time				02-Dec-2025 10:12	02-Dec-2025 11:25	02-Dec-2025 11:42	02-Dec-2025 12:05	02-Dec-2025 12:12	
Compound	CAS Number	LOR	Unit	EW2505944-001	EW2505944-002	EW2505944-003	EW2505944-004	EW2505944-005	
				Result	Result	Result	Result	Result	
EA005FD: Field pH									
pH	----	0.1	pH Unit	7.4	7.5	7.4	7.5	7.5	
EA010FD: Field Conductivity									
Conductivity @ 25oC	----	1	µS/cm	1090	51200	48600	51100	52000	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	----	34500	31700	34200	33600	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	6	<5	<5	<5	<5	
EA045: Turbidity									
Turbidity	----	0.1	NTU	4.3	----	2.8	2.5	2.1	
EA116: Temperature									
Temperature	----	0.5	°C	18.0	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	399	147	161	148	140	
Total Alkalinity as CaCO3	----	1	mg/L	399	147	161	148	140	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	35	2680	2500	2750	2800	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	127	----	15600	17900	17300	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	57	519	430	458	518	
Magnesium	7439-95-4	1	mg/L	34	----	1210	1340	1520	
Sodium	7440-23-5	1	mg/L	154	----	9380	10200	11600	
Potassium	7440-09-7	1	mg/L	15	411	365	395	449	
EG020F: Dissolved Metals by ICP-MS									
Iron	7439-89-6	0.05	mg/L	0.12	<0.10	<0.10	0.22	<0.10	
EG020T: Total Metals by ICP-MS									



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SWP1 Point 1	SWC_2 Point 19	SWC_UP Point 20	SWC_Down Point 21	SWC_DOWN_2 Point 22
Sampling date / time				02-Dec-2025 10:12	02-Dec-2025 11:25	02-Dec-2025 11:42	02-Dec-2025 12:05	02-Dec-2025 12:12
Compound	CAS Number	LOR	Unit	EW2505944-001	EW2505944-002	EW2505944-003	EW2505944-004	EW2505944-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.528	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.18	<0.10	<0.10	<0.10	<0.10
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.9	0.9	0.9	0.9
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.08	0.08	0.07	0.05
EK055G-NH4: Ammonium as N by DA								
Ammonium as N	14798-03-9_N	0.01	mg/L	----	0.08	0.08	0.07	0.05
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	12.3	----	495	565	549
∅ Total Cations	----	0.01	meq/L	12.7	----	538	587	667
∅ Ionic Balance	----	0.01	%	1.77	----	4.17	1.89	9.69
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	48	4	5	4	3
EP025FD: Field Dissolved Oxygen								
Dissolved Oxygen	----	0.01	mg/L	2.62	5.10	5.21	5.83	5.65
Dissolved Oxygen - % Saturation	----	0.1	% saturation	27.8	66.7	67.8	77.5	75.3

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Duplicate	----	----	----	----
Sampling date / time				02-Dec-2025 11:25	----	----	----	----	
Compound	CAS Number	LOR	Unit	EW2505944-006	-----	-----	-----	-----	
				Result	----	----	----	----	
EA005FD: Field pH									
pH	----	0.1	pH Unit	7.5	----	----	----	----	
EA010FD: Field Conductivity									
Conductivity @ 25oC	----	1	µS/cm	51200	----	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	34400	----	----	----	----	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	2.1	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	147	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	147	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2590	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	17000	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	485	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	1390	----	----	----	----	
Sodium	7440-23-5	1	mg/L	10700	----	----	----	----	
Potassium	7440-09-7	1	mg/L	418	----	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Iron	7439-89-6	0.05	mg/L	<0.10	----	----	----	----	
EG020T: Total Metals by ICP-MS									
Iron	7439-89-6	0.05	mg/L	<0.10	----	----	----	----	
EK040P: Fluoride by PC Titrator									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Duplicate	----	----	----	----
Sampling date / time				02-Dec-2025 11:25	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EW2505944-006	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EK040P: Fluoride by PC Titrator - Continued									
Fluoride	16984-48-8	0.1	mg/L	0.9	----	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.08	----	----	----	----	----
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.08	----	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	536	----	----	----	----	----
∅ Total Cations	----	0.01	meq/L	615	----	----	----	----	----
∅ Ionic Balance	----	0.01	%	6.80	----	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	4	----	----	----	----	----
EP025FD: Field Dissolved Oxygen									
Dissolved Oxygen	----	0.01	mg/L	5.10	----	----	----	----	----
Dissolved Oxygen - % Saturation	----	0.1	% saturation	66.7	----	----	----	----	----



Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry / Biology).

(WATER) ED093F: Dissolved Major Cations

(WATER) EK040P: Fluoride by PC Titrator

(WATER) ED037P: Alkalinity by PC Titrator

(WATER) EP005: Total Organic Carbon (TOC)

(WATER) EK058G: Nitrate as N by Discrete Analyser

(WATER) EK057G: Nitrite as N by Discrete Analyser

(WATER) EK059G: Nitrite plus Nitrate as N (NO_x) by Discrete Analyser

(WATER) ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA

(WATER) EA025: Total Suspended Solids dried at 104 ± 2°C

(WATER) EA015: Total Dissolved Solids dried at 180 ± 5 °C

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EK055G-NH₄: Ammonium as N by DA

(WATER) EK055G: Ammonia as N by Discrete Analyser

(WATER) EA045: Turbidity

(WATER) EN055: Ionic Balance

(WATER) ED045G: Chloride by Discrete Analyser



CERTIFICATE OF ANALYSIS

Work Order : **EW2505945**
Client : **SHELLHARBOUR CITY COUNCIL**
Contact : Vivienne Morrow
Address : LAMERTON HOUSE, LAMERTON CRESCENT
SHELL HARBOUR CITY CENTRE NSW, AUSTRALIA 2529
Telephone : ----
Project : Dunmore Quarterly Leachate EPL
Order number : 174513
C-O-C number : ----
Sampler : Robert DaLio
Site : DUNMORE LANDFILL TENDER
Quote number : EW24SHECIT0001 (RFT 2024/81) Tender V2
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 4
Laboratory : Environmental Division NSW South Coast
Contact : Aneta Prosaroski
Address : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia
Telephone : 02 42253125
Date Samples Received : 02-Dec-2025 13:59
Date Analysis Commenced : 02-Dec-2025
Issue Date : 11-Dec-2025 22:14



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Robert DaLio	Sampler	Laboratory - Wollongong, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH performed by ALS Wollongong via in-house method EA005FD and EN67 PK.
- Electrical conductivity performed by ALS Wollongong via in-house method EA010FD and EN67 PK.
- Temperature performed by ALS Wollongong via in-house method EA116 and EN67 PK.
- Dissolved oxygen (DO) performed by ALS Wollongong via in-house method EP025FD and EN67 PK.
- All field analysis performed by ALS Wollongong were completed at the time of sampling.
- Sampling completed by ALS Wollongong in accordance with in-house sampling method EN/67.10 Wastewaters
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Leachate LP1	----	----	----	----
Sampling date / time					02-Dec-2025 09:35	----	----	----	----
Compound	CAS Number	LOR	Unit		EW2505945-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EA005FD: Field pH									
pH	----	0.1	pH Unit		8.1	----	----	----	----
EA010FD: Field Conductivity									
Conductivity @ 25oC	----	1	µS/cm		9620	----	----	----	----
EA116: Temperature									
Temperature	----	0.5	°C		25.3	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		286	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		286	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		<1	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		128	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		315	----	----	----	----
Potassium	7440-09-7	1	mg/L		361	----	----	----	----
EG020T: Total Metals by ICP-MS									
Manganese	7439-96-5	0.001	mg/L		0.152	----	----	----	----
Iron	7439-89-6	0.05	mg/L		0.87	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.3	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.43	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		753	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Leachate LP1	----	----	----	----
Sampling date / time					02-Dec-2025 09:35	----	----	----	----
Compound	CAS Number	LOR	Unit		EW2505945-001	-----	-----	-----	-----
				Result		----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		753	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		267	----	----	----	----
EP025FD: Field Dissolved Oxygen									
Dissolved Oxygen	----	0.01	mg/L		7.17	----	----	----	----
Dissolved Oxygen - % Saturation	----	0.1	% saturation		90.5	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry / Biology).

(WATER) ED093F: Dissolved Major Cations

(WATER) EP005: Total Organic Carbon (TOC)

(WATER) EK055G: Ammonia as N by Discrete Analyser

(WATER) EK057G: Nitrite as N by Discrete Analyser

(WATER) EK058G: Nitrate as N by Discrete Analyser

(WATER) EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser

(WATER) EG020T: Total Metals by ICP-MS

(WATER) ED045G: Chloride by Discrete Analyser

(WATER) ED037P: Alkalinity by PC Titrator

(WATER) EK040P: Fluoride by PC Titrator

(WATER) ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA

Appendix C:
Laboratory Chain of Custody (COC) & Certificates of Analysis
(COA) – Dust Samples

ENFM (204/17)



CERTIFICATE OF ANALYSIS

Work Order : **EW2506355**
Client : **SHELLHARBOUR CITY COUNCIL**
Contact : Vivienne Morrow
Address : LAMERTON HOUSE, LAMERTON CRESCENT
SHELL HARBOUR CITY CENTRE NSW, AUSTRALIA 2529
Telephone : ----
Project : Dunmore Landfill Dust
Order number : 174513
C-O-C number : ----
Sampler : Robert DaLio
Site : DUNMORE LANDFILL TENDER
Quote number : EW24SHECIT0001 (RFT 2024/81) Tender V2
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 3
Laboratory : Environmental Division NSW South Coast
Contact : Aneta Prosaroski
Address : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia
Telephone : 02 42253125
Date Samples Received : 18-Dec-2025 14:18
Date Analysis Commenced : 22-Dec-2025
Issue Date : 02-Jan-2026 17:14



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Shane Merrell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

- DUST conducted by ALS Newcastle, NATA Accreditation No. 825, Site No. 1656.
- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited.
- Sampling completed by ALS Wollongong in accordance with in-house sampling method EN/66.1 Sampling and Siting of Dust Deposition Gauges.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: AIR)

Sample ID

				DDG1 20/11/2025 - 18/12/2025	DDG2 20/11/2025 - 18/12/2025	DDG3 20/11/2025 - 18/12/2025	DDG4 20/11/2025 - 18/12/2025	----
Sampling date / time				18-Dec-2025 12:30	18-Dec-2025 12:20	18-Dec-2025 12:00	18-Dec-2025 11:52	----
Compound	CAS Number	LOR	Unit	EW2506355-001	EW2506355-002	EW2506355-003	EW2506355-004	-----
				Result	Result	Result	Result	----
EA120: Ash Content								
Ash Content	----	0.1	g/m ² .month	0.6	0.3	0.9	2.1	----
Ash Content (mg)	----	2	mg	10	6	18	35	----
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m ² .month	0.5	<0.1	0.1	1.1	----
Combustible Matter (mg)	----	2	mg	9	<2	<2	19	----
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	1.1	0.3	1.0	3.2	----
Total Insoluble Matter (mg)	----	2	mg	19	6	19	54	----

Page : 3 of 3
Work Order : EW2506355
Client : SHELLHARBOUR CITY COUNCIL
Project : Dunmore Landfill Dust



Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(AIR) EA125: Combustible Matter

(AIR) EA120: Ash Content

(AIR) EA141: Total Insoluble Matter

Appendix D: Surface Gas (Methane) Field Sheets

ALS Landfill Emissions Report



Client:Shellharbour City Council

Date:16/12/2025

Site:Dunmore

Sampler(s)Michael Santos & Robert Dalio

Transact / Location	Point	GPS North	GPS East	CH4 Conc (ppm)	Comments
A					No Safe Access Overgrown needs clearing
B	1	6168 223	302 434	0.0	
B	2	6168 238	302 437	0.0	Methane Cage
B	3	6168 260	302 441	0.1	
B	4	6168 269	302 438	0.0	
B	5	6168	302		No Safe Access Equipment and Overgrown
B	6	6168	302		No Safe Access Equipment and Overgrown
C	1	6168 436	302 376	0.0	
C	2	6168 408	302 384	0.0	
C	3	6168 367	302 397	0.0	
C	4	6167 328	302 406	0.0	
C	5	6167 286	302 414	0.0	
C	6	6168 240	302 419	0.0	
C	7	6168 04	302 422	0.1	
C	8	6167 175	302 421	0.0	
C	9	6168 155	302 418	0.1	
C	10	6168	302		No Safe Access. Closed Road
C	11	6168	302		No Safe Access. Closed Road
C	12	6168	302		No Safe Access. Closed Road
C	13	6167	302		No Safe Access. Closed Road
D	1	6168 147	302 395	0.0	
D	2	6168 159	302 394	0.0	
D	3	6168 178	302 394	0.0	
D	4	6168 191	302 391	0.1	
D	5	6168 205	302 390	0.0	
D	6	6168 216	302 385	0.1	
D	7	6168	302		No Access Fenced Off
E	1	6168 213	302 360	0.0	
E	2	6168 195	302 357	0.0	
E	3	6168 179	302 357	0.0	
E	4	6168 140	302 361	0.0	

E	5	6168	302		No Access Fence Off
E	6	6168	302		No Access Fence Off
E	7	6168	302		No Access Fence Off
F	1	6168 145	302 345	0.0	
F	2	6168 158	302 332	0.0	
F	3	6168 170	302 326	0.1	
F	4	6168 186	302 323	0.1	
F	5	6168 198	302 325	0.1	
F	6	6168 211	302 327	0.0	
G	1	6168 410	302 253	0.0	
G	2	6168 421	302 287	0.0	
G	3	6168 438	302 310	0.0	
G	4	6168 457	302 345	0.0	
H	1	6168 490	302 355	0.0	
H	2	6168 472	302 309	0.0	
H	3	6168 437	302 265	0.0	
H	4	6168 401	302 227	0.0	
H	5	6168 366	302 189	0.0	
H	6	6168 336	302 160	0.0	
H	7	6168 303	301 131	0.0	
H	8	6168 263	301 096	0.0	
H	9	6168 220	302 077	0.0	
H	10	6168 151	302 064	0.1	
H	11	6168 098	302 061	0.1	
H	12	6168 043	302 093	0.0	
H	13	6168 007	302 133	0.0	
H	14	6167 971	302 164	0.0	
H	15	6167 934	302 199	0.0	
H	16	6167 894	302 242	0.1	
H	17	6167 874	302 298	0.0	
H	18	6167 875	302 341	0.1	
H	19	6167 881	302 392	0.1	
H	20	6167 888	302 429	7.7	
H	21	6167 899	302 463	0.1	
H	22	6167 185	302 530	0.0	
H	23	6167 155	302 540	0.1	
H	24	6167 116	302 562	0.0	
H	25	6168 074	302 585	0.0	
H	26	6168 081	302 619	0.0	

H	27	6168 104	302 631	0.0	
H	28	6168 126	302 619	0.0	
H	29	6168 152	302 599	0.0	
H	30	6168 184	302 584	0.0	
H	31	6168 217	302 568	0.0	
H	32	6168 247	302 542	0.0	
H	33	6168 289	302 544	0.0	
H	34	6168 338	302 551	0.1	
H	35	6168 370	302 554	0.0	
H	36	6168 406	302 559	0.0	
H	37	6168 428	302 550	0.0	
H	38	6168 462	302 529	0.0	
I	1	6168 168	302 115	0.1	
I	2	6168 165	302 152	0.0	
I	3	6168 178	302 179	0.0	
I	4	6168 179	302 210	0.0	
J	1	6168 229	302 235	0.1	
J	2	6168 256	302 227	0.0	
J	3	6168 280	302 221	0.0	
J	4	6167 307	302 211	0.1	
J	5	6167 344	302 197	0.1	
K	1	6168 530	302 390	0.1	
K	2	6168 543	302 420	0.0	
K	3	6168 553	302 460	0.0	
K	4	6168 589	302 446	0.0	
K	5	6168 592	302 410	0.1	
K	6	6168 568	302 369	0.0	
L	1	6168 756	302 336	0.0	
L	2	6168 732	302 321	0.0	
L	3	6168 707	302 301	0.0	
L	4	6168 679	302 279	0.0	
L	5	6168 650	302 253	0.1	
L	6	6168 623	302 239	0.0	
L	7	6168 597	302 221	0.1	
L	8	6168 574	302 199	0.1	

Compressor Shed	1			0.0	
Office	1			6.3	
Community Recycling Centre	1			0.1	
OLD Weighbridge	1			1.7	
OLD Weighbridge Toilet	1			5.3	
Revolve Shop	1			0.1	
Building Truckwash	1			0.0	
New Weighbridge	1			0.0	
Methane Blank (Pre testing)				0.0	Taken at entrance to Dunmore site before main gate
Methane Blank (Post testing)				0.0	Taken at entrance to Dunmore site before main gate
Comments:					
Sampling performed in accordance to EPA Environmental Guidelines Solid Waste Landfills, Second Edition, 2016					
Gas concentrations are reported as raw values without correction for background concentration.					

Appendix E:
Laboratory Chain of Custody (COC) & Certificates of Analysis
(COA) – Overflow Events

Appendix F: Calibration Certificates

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Calibration certificate number 24RA-66602

Instrument Laser One Serial Number 41519

Description of the calibration procedure:

The calibration is verified with certified gas bottle. The maximum error of the instrument as specified in the datasheet.

Gas verification from 0-1000ppm CH₄

Full scale (ppm)	Gas concentration (ppm)	Response 1 (ppm)	Response 2 (ppm)	Response 3 (ppm)	Average response (ppm)	Maximum error (ppm)	Maximum error (% F.s.)	Maximum error %
1000	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1000	2.9	2.6	2.6	2.6	2.60	0.30	0.03	0.03
1000	10.1	9.7	9.7	9.7	9.70	0.40	0.04	0.04
1000	102.0	103.0	103.0	103.0	103.00	1.00	0.10	0.10
1000	1006.0	1030.0	1030.0	1030.0	1030.00	24.00	2.40	2.40

Uncertainty	2.40	%
Max % error	2.40	% FS

Gas verification from 0-100% vol CH₄

Full scale (%vol)	Gas concentration (%vol)	Response 1 (%vol)	Response 2 (%vol)	Response 3 (%vol)	Average response (%vol)	Maximum error (%vol)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00
100.00	2.19	2.2	2.2	2.2	2.20	0.01	0.01	0.01
100.00	5.00	5.0	5.0	5.0	5.00	0.00	0.00	0.00
100.00	15.00	15.2	15.2	15.2	15.20	0.20	0.20	0.20
100.00	50.00	54.9	54.9	54.9	54.90	4.90	4.90	4.90
100.00	100.00	98.5	98.5	98.5	98.50	1.50	1.50	1.50

Uncertainty	4.90	%
Max % error	4.90	% FS

Gas verification from 0-100% CH₄ LEL (0-4.4% VOL)

Full scale (%vol)	Gas concentration (LEL%)	Response 1 (LEL%)	Response 2 (LEL%)	Response 3 (LEL%)	Average response (%vol)	Maximum error (LEL%)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.10	2.10	2.10	2.10	2.10	0.00	0.00	0.00
100.00	50.00	50.00	50.00	50.00	50.00	0.00	0.00	0.00

Uncertainty	0.00	%
Max % error	0.00	% FS

www.qedenv.com (800) 624-2026 info@qedenv.com

QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Environmental conditions during calibration

Temp.	22.5	C
Pressure	998.3	mBar

Gas bottles used for calibration

Gas	Cylinder number	Expiry date	Gas
Synthetic Air	301134	5/10/2029	Synthetic Air
3 ppm	DT0043950	12/19/2032	CH4
10 ppm	DT0011388	1/28/2033	CH4
100ppm	DT0055243	10/18/2028	CH4
1000 ppm	CC64714	9/27/2028	CH4
1.0% Vol	DT0008070	5/24/2029	CH4
2.2% vol	CC499453	6/4/2029	CH4
5.0% vol	4830367Y	5/31/2029	CH4
15% vol	3349204Y	6/12/2029	CH4
50% vol	CC708175	1/22/2029	CH4
100% vol	HP-T-105403	8/22/2028	CH4

Calibration results: **Pass**

Calibration date: 21/02/2025

DD/MM/YYYY

Next scheduled calibration:

21/02/2026

DD/MM/YYYY

Issued by:

Christopher Fleenor

www.qedenv.com (800) 624-2026 info@qedenv.com

QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

Appendix G: Gas Flare Reports



BIOGAS MONTHLY REPORT - Dunmore, NSW

Reporting Month: October 2025

Prepared by: Calvin Neale

Checked by: Joeseeph Mikhail

Date Issued: 13 November 2025

Environmental Impact



149 thousand

ACCU's Generated
Since Scheme project
Start



31,886,583

m³ Biogas Captured
Since Inception



3,297

tCO₂e Gross
Abatement this Month



5,047,434

Seedlings planted for
10 years



6,520

Cars off the road for the
last 12 months of
carbon abatement
(tCO₂e)

BIOGAS CAPTURE AND CARBON ABATEMENT FROM LANDFILL

- Long-term contract with Shellharbour City Council to recover and beneficially use biogas and abate carbon from this regional landfill in Dunmore. This improves air quality, reduces greenhouse gas emissions and contributes to the local economy.
- While there is no regulatory requirement to capture biogas, ACCUs enable additional carbon abatement by making it commercially viable to upgrade and expand the biogas capture system under the Emissions Reduction Fund (ERF). This empowers LGI to install and operate a viable flaring project.
- Since 2013, LGI has installed a bespoke biogas management system with an LGI-made 1000 m³/hr ERF compliant biogas flare. Council benefits from this bespoke system at minimal cost.
- LGI collaborates closely with the Council regarding the design, installation, operations and maintenance of the biogas management system, including the monitoring and reporting services provided.

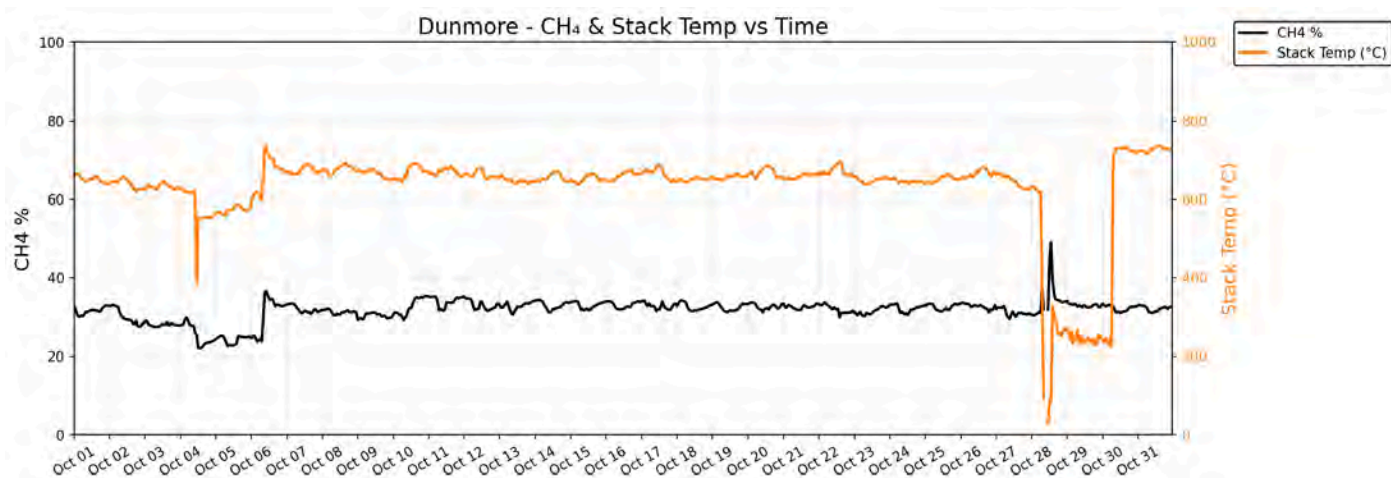
Period	Commentary
October 2024	LGI repaired a submain that was damaged in day to day operations. LGI conducting repair works on the flare (asset team for further information).
March 2025	LGI conducted a site visit and has marked out a further 14-18 wells in the recently completed Cell. LGI to start works around the 19th of May 2025 if all approval processes are completed.
May 2025	New installation works begun.
June 2025	Project completed, 16 wells installed and connected. Increase in flow was achieved.
September 2025	Maintenance and Upkeep conducted on flare in addition to minor repairs to field.

PO: Planned Outage, UOI: Unplanned Outage Internal, UOE: Unplanned Outage External

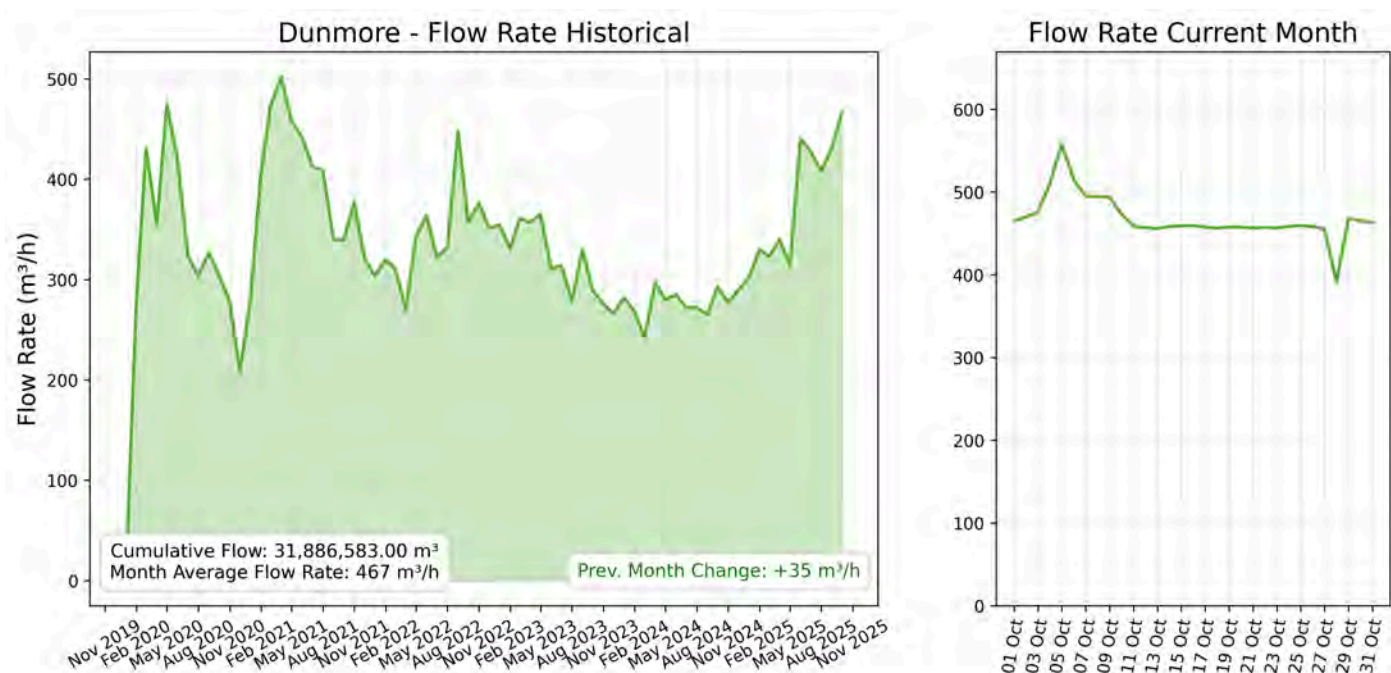
Comments on Operation/Maintenance	Value
Availability (%)	100.00
Total Downtime (hrs)	0.0
Downtime Breakdown (hrs)	PO: 0h, UOI: 0h, UOE: 0h
Field Tuning	10/10/2025

This report was prepared by LGI Limited with all reasonable skill, care, and diligence. This report is confidential and for client use only. No reproduction without consent.

Gas Composition Analysis



Biogas Flow Rate Analysis



31,886,583 m³ of combusted landfill gas from the beginning of the project up to 1 October 2025 represents:

- **302,846** tonnes of CO₂ equivalent (total methane abated by gas capture system to date).
- **5,047,434** seedlings planted for 10 years
- **6,520** (cars off the road for the last 12 months)

Biogas captured is the cumulative flow reading at the last day of the month.

Please note:

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Where LGI has been accorded gas rights under the terms and conditions of the agreement with the client, the data contained in this report represents confidential commercial information and should not be copied or disseminated in any form to a third party without prior consent from LGI.

LFG System Upgrades

Period	Archived
January 2016	LGI disconnected the 4 lateral wells and 8 vertical wells.
April 2016	LGI reconnected 8 vertical wells in the SE corner and 4 lateral wells.
June 2016	LGI disconnected the extended gas capture system to assist the Council.
September 2016	LGI disconnected the extended gas capture system to assist the Council.
November 2016	LGI commissioned the connection to leachate sump 6 as of 23-11-2016.
May 2017	LGI installed an additional 10 vertical wells to the existing LFG system.
November 2019	LGI on site to move mainline up batter, and reconnected infrastructure that had been previously disconnected, including 4 wells on the dimple and a 160mm leachate riser.
April 2020	LGI installed a flowline to sump 6 after earlier disconnection.
February 2021	LGI installed 13 new vertical wells, including a new submain.
March 2022	LGI replaced the flare gas analyser panel with a Draeger model analyser for greater accuracy and reliability.
August 2022	LGI repaired the 225mm mainline and adjacent submain to allow for intermediate capping to continue across the top of cell 3.
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October 2023	LGI replaced the flare with a brand new flare of identical capacity. The new flare has improved control systems, reliability and performance, and will be compliant with current Type B Gas and Hazardous Area Zoning regulations.



BIOGAS MONTHLY REPORT - Dunmore, NSW

Reporting Month: November 2025

Prepared by: Calvin Neale

Checked by: Joeseeph Mikhail

Date Issued: 12 December 2025

Environmental Impact



149 thousand

ACCUs Generated
Since Scheme project
Start



32,209,770

m³ Biogas Captured
Since Inception



3,070

tCO₂e Gross
Abatement this Month



5,098,592

Seedlings planted for
10 years



6,774

Cars off the road for the
last 12 months of
carbon abatement
(tCO₂e)

BIOGAS CAPTURE AND CARBON ABATEMENT FROM LANDFILL

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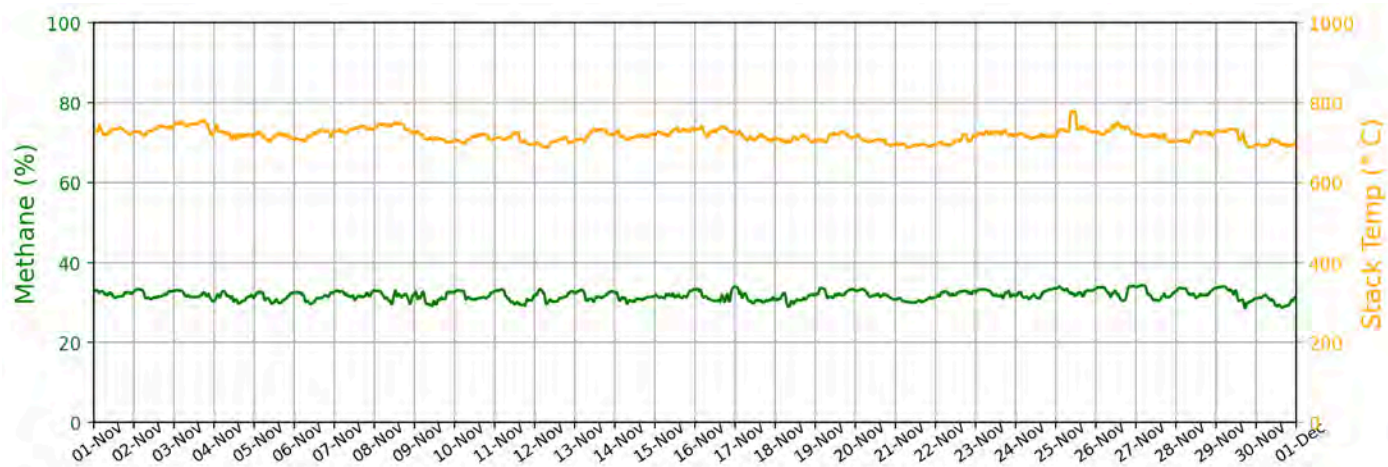
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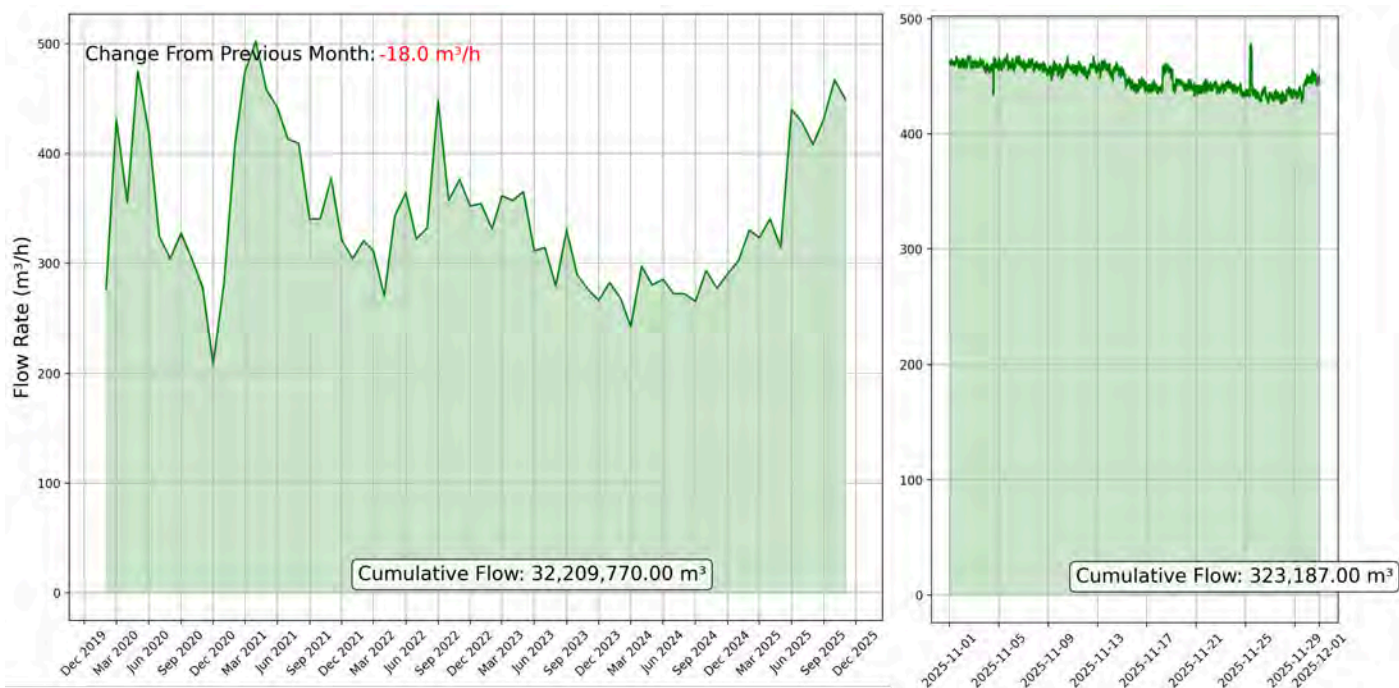
Comments on Operation/Maintenance	Value
Availability (%)	100.00
Total Downtime (hrs)	0
Downtime Breakdown (hrs)	PO: 0h, UOI: 0h, UOE: 0h
Field Tuning	24/11/2025

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Gas Composition Analysis



Biogas Flow Rate Analysis



32,209,770 m³ of combusted landfill gas from the beginning of the project up to 1 December 2025 represents:

- 305,916 tonnes of CO₂ equivalent (total methane abated by gas capture system to date).
- 5,098,592 seedlings planted for 10 years
- 6,774 (cars off the road for the last 12 months)

Biogas captured is the cumulative flow reading at the last day of the month.

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BIOGAS MONTHLY REPORT - Dunmore, NSW

Reporting Month: December 2025

Prepared by: Calvin Neale

Checked by: Joeseeph Mikhail

Date Issued: 09 January 2026

Environmental Impact



149 thousand

ACCUs Generated
Since Scheme project
Start



32,553,591

m³ Biogas Captured
Since Inception



3,265

tCO₂e Gross
Abatement this Month



5,153,016

Seedlings planted for
10 years



7,036

Cars off the road for the
last 12 months of
carbon abatement
(tCO₂e)

BIOGAS CAPTURE AND CARBON ABATEMENT FROM LANDFILL

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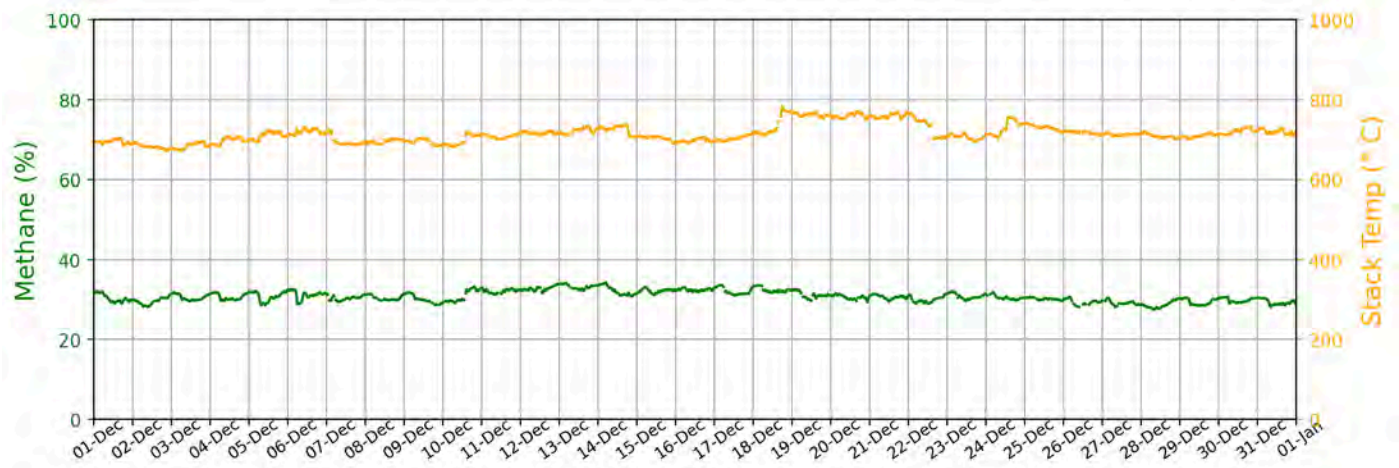
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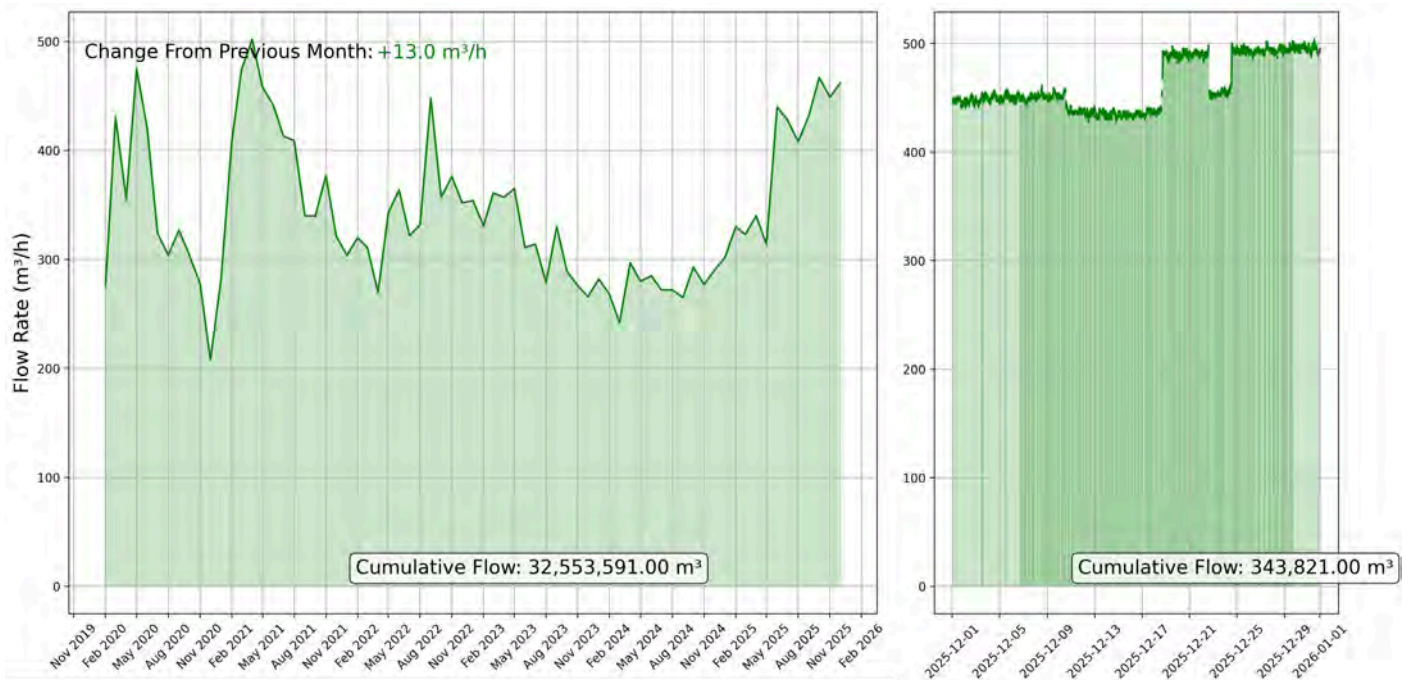
Comments on Operation/Maintenance	Value
Availability (%)	100.00
Total Downtime (hrs)	0.00
Downtime Breakdown (hrs)	PO: 0h, UOI: 0h, UOE: 0h
Field Tuning	10/12/2025

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Gas Composition Analysis



Biogas Flow Rate Analysis



32,553,591 m³ of combusted landfill gas from the beginning of the project up to 1st January 2025 represents:

- **309,181** tonnes of CO₂ equivalent (total methane abated by gas capture system to date).
- **5,153,016** seedlings planted for 10 years
- **7,036** (cars off the road for the last 12 months)

Biogas captured is the cumulative flow reading at the last day of the month.

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