# Baseline Surface Water Monitoring Report

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**EASTERN LEASES PROJECT**

# BASELINE SURFACE WATER MONITORING REPORT

for

**South32 Pty Ltd**

May 2015

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

# EASTERN LEASES PROJECT

# BASELINE SURFACE WATER MONITORING REPORT

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## GLOSSARY AND ABBREVIATIONS

| | |
|---|---|
| Aggradation | The process by which an increase in land elevation occurs due to the deposition of sediment |
| Blank | Sample collected to detect contamination in the sampling and/or analysis process |
| Bed Slope | The gradient/slope of a water channel |
| Bedform | A feature in bed material that develops as the result of water flow, such as riffles and cascades. Bedforms are characteristic to flow parameters, and may be used to infer flow depth and velocity |
| Catchment | The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location. |
| Cease to Flow Depth | The level at which a river ceases or stops flowing |
| Channel | The flow path of a waterway defined by its banks and bed |
| Confluence | A flowing together of two or more streams or rivers. The junction of two rivers coming together |
| Cumec (cubic metre per second) | A unit of measure for the flow rate of water |
| Datum | A common surface level approximately corresponding to mean sea level |
| Digital Elevation Model (DEM) | A digital model or 3D representation of a terrain's surface |
| Discharge | The rate of flow of water measured in terms of volume per unit time, for example, cubic metres per second |
| Drainage Channels | A channel along the surface in which water flows to a lower elevation |
| Duplicate | Sample collected to confirm magnitudes of errors occurring between sampling and sample analysis |
| Erosion | A process by which materials are removed from one location (by either water flow or wind) and transported and deposited at another |
| Flow Gauging | The act of measuring (gauging) water flow |
| Geology | The geological features and processes occurring in an area |
| Geomorphic condition | The condition of a waterway, judged by reference to the natural condition of the river |
| Geomorphology | The science of landforms with an emphasis on their form, origin and evolution |
| Hydraulic gradient | The difference between the groundwater level measured at two points in an aquifer divided by the distance between them |
| Hydrology | The study of rainfall and runoff processes; in particular, the evaluation of peak flows, flow volumes and the derivation of hydrographs for a range of floods |
| LiDAR | Light Detection and Ranging – A remote sensing system which works on the principle of radar, but uses light from a laser. It provides data that can be used to produce a digital elevation model. |
| Low Flow | The lowest sustaining flow during base runoff conditions of a waterway |
| Overbank Area | An area covered by flood waters overtopping river banks |
| Overland Sheet Flow | Flow of water overland before a drainage channel is reached |
| Riparian | Relating to or situated on the banks of a river |
| Topography | The surface shape and features of a landscape |
| Tributary | A stream or river that flows into a larger river |

# EASTERN LEASES PROJECT
# BASELINE SURFACE WATER MONITORING REPORT

***for***
***South32 Pty Ltd***

## 1 INTRODUCTION

Hansen Bailey was commissioned by BHP Billiton Manganese Australia Pty Ltd to report baseline surface water monitoring data as part of the Environmental Impact Statement (EIS) for the Eastern Leases Project (the project).

### 1.1 PROJECT DESCRIPTION

The project proponent is the Groote Eylandt Mining Company Pty Ltd (GEMCO), which has two shareholders, namely South32 Pty Ltd (60%) and Anglo Operations (Australia) Pty Ltd (40%). BHP Billiton Manganese Australia Pty Ltd was previously a shareholder in GEMCO, however its interest is now represented by South32.

The project involves the development of a number of open cut mining areas to the east of the existing GEMCO manganese mine on Groote Eylandt in the Gulf of Carpentaria, approximately 650 km south-east of Darwin (Figure 1). The proposed additional mining areas are located on the Eastern Leases, which are two Exploration Licences in Retention (ELRs). ELR28161 is termed the Northern Eastern Lease (Northern EL) and ELR28162 is termed the Southern Eastern Lease (Southern EL).

The Eastern Leases are located 2 km east of the existing GEMCO mine at the closest point. The township of Angurugu is located approximately 6 km to the north-west of the Eastern Leases, and is the closest residential community (Figure 2). The Eastern Leases are located on Aboriginal land, scheduled under the *Aboriginal Land Rights (Northern Territory) Act 1976*. The land within the Eastern Leases comprises natural bushland, with the Emerald River and a small section of the Amagula River traversing the Northern EL and Southern EL respectively.

The project involves:

- Developing a number of open cut mining areas (termed “quarries”) within the Eastern Leases and mining manganese ore by the same mining methods that are in use at the existing GEMCO mine;
- Constructing limited mine related infrastructure in the Eastern Leases (dams, water fill points, crib hut, truck park up areas and laydown storage areas); and

- Transporting the ore by truck on a new haul road to be constructed between the existing GEMCO mine and the Eastern Leases.

Ore will be processed at the concentrator at the existing GEMCO mine and the concentrate would be transported to market via the existing port (Figure 2). No changes or upgrades to the existing GEMCO mine facilities are required as a result of the project. Ore mined from the Eastern Leases will supplement production from the existing GEMCO mine, but the project will not increase GEMCO's annual production rate of approximately 5 Million tonnes per annum of product manganese.

## 1.2 SCOPE OF REPORT

This report presents the results and analysis of surface water monitoring data including data which relates to baseline water quality and flows, and the geomorphology of the watercourses that traverse the project site. This report provides the following relevant baseline data:

- Watercourse geomorphology (i.e. physical characteristics of watercourses);
- Surface water flow characteristics; and
- Surface water quality.

The investigation and assessment methodology is provided for each of these baseline datasets.

This report is presented as a technical appendix to the EIS and is intended to be read in conjunction with the surface water assessment presented in the EIS Surface Water Section.

## 1.3 REPORT STRUCTURE

This report is structured as follows:

- Section 1 (this section) provides an overview of the project and details the scope of this report.
- Section 2 provides a description of the existing surface water setting.
- Section 3 describes the methodology that was used in the collection and analysis of baseline data for watercourse geomorphology, flow and quality.
- Section 4 presents the results of the baseline watercourse geomorphology study and a discussion of the findings.
- Section 5 presents the baseline surface water flow results and a discussion of the findings.

- Section 6 presents the baseline surface water quality results and a discussion of the findings.

Appendices A and B present the raw field data, while Appendix C presents water quality analysis.

# 2 SURFACE WATER SETTING

## 2.1 REGIONAL CATCHMENT SETTING

The project site is located on Groote Eylandt, a 2,285 km$^2$ island in the Gulf of Carpentaria. The central areas of the island are characterised by elevated rocky outcrops that form hills and escarpments with limited vegetation and soil cover. The rocky outcrops limit the vegetation and soil cover within this centre portion of the island. Between these hills and escarpments, the low-lying topography forms densely vegetated, gently sloping valleys that open into flat coastal plains. These hills and escarpments define the surface water catchments across the majority of the island. The relief of the landscape in the area surrounding the project site is shown in Figure 3.

Regionally, the surface geology is naturally enriched in metals and depleted in minerals, and exhibits low soil erosion rates. This results in naturally low suspended sediment loads and elevated concentrations of metals in watercourses.

## 2.2 DRAINAGE SETTING

There are three main river systems in the southern half of Groote Eylandt, these being the Amagula, Emerald and Angurugu Rivers. These rivers typically flow in a west or south-westerly direction, draining into the sea. The river systems are largely undisturbed by human activities.

Each of these rivers typically experience significantly high flows during the monsoonal wet season which occurs from November to April. During the dry season, the upper reaches of these rivers experience low to no flows, with isolated pools often forming along the course of the rivers. However, all three rivers sustain continuous flow throughout the year in their lower reaches (downstream of the project site) due to groundwater inflows, which assist in maintaining flows during the dry season.

### 2.2.1 Drainage of the Project Site

The project site is located in the upper catchments of the Amagula, Emerald and Angurugu Rivers (Figure 3). The Emerald River and its tributary watercourses drain the majority of the Northern EL and the western area of the Southern EL. The Amagula River drains the eastern area of the Southern EL via the main channel and two tributary watercourses. The main channel of the Angurugu River does not traverse the project site.

The majority of the project site drains towards the coast from elevated rock outcrops located at the periphery of the project site. Minor drainage features include a network of minor gullies in the steeper topography associated with elevated outcrops, and overland flow paths in the lower lying areas. These drainage features coalesce to form regionally significant

watercourses in the flatter areas of the project site. The main watercourses are typically channelised through the project site and characterised by narrow, rocky channels and chains of pools. Site drainage is highly ephemeral through the majority of the project site.

There are no lakes, dams or permanent wetlands occurring within the project site.

#### 2.2.1.1 Amagula River

The Amagula River rises in the eastern part of Groote Eylandt and flows in a south-westerly direction. It discharges to the sea on the southern coast of the island, approximately 21 km south of the Southern EL (Figure 3). The Amagula River has a catchment area of 24,300 ha.

A small section of the Amagula River – Main Channel intersects the south-eastern corner of the Southern EL (Figure 4). The Amagula River has the following two tributaries which traverse parts of the project site, namely:

- Amagula River – Tributary 1 traverses the centre of the Southern EL, flowing toward the south and draining into the Amagula River – Main Channel approximately 0.8 km to the south of the Southern EL; and
- Amagula River – Tributary 2 traverses the eastern portion of the Southern EL, flowing toward the south and draining into the Amagula River – Main Channel where the main channel crosses the boundary of the Southern EL.

The eastern half of the Southern EL falls within the Amagula River Catchment (Figure 3).

#### 2.2.1.2 Emerald River

The Emerald River rises in the central area of Groote Eylandt and flows in a westward direction toward the south-western coast of the island. It discharges into the sea approximately 12.6 km downstream of the Northern EL and 7 km downstream of the Southern EL (Figure 3). The Emerald River has a catchment area of 9,500 ha.

The Emerald River – Main Channel traverses the middle of the Northern EL and is crossed by the proposed haul road corridor at one location to the west of the Northern EL (Figure 4). The Emerald River has the following three tributaries which traverse parts of the project site:

- Emerald River – Tributary 1 traverses the southern section of the Northern EL, and drains into the Emerald River – Main Channel approximately 2.3 km to the west of the Northern EL;
- Emerald River – Tributary 2 traverses the western section of the Southern EL; and drains into the Emerald River – Main Channel approximately 8.1 km downstream of the Northern EL and 2.5 km to the west of the Southern EL; and

- Emerald River – Tributary 3 flows south into the Emerald River – Main Channel approximately 3.4 km downstream of the Northern EL. The Emerald River – Tributary 3 is crossed by a section of the haul road corridor approximately 0.7 km upstream of this confluence.

The majority of the Northern EL, the western half of the Southern EL, and the entire haul road corridor lie within the Emerald River Catchment (Figure 3).

#### 2.2.1.3 Angurugu River

The Angurugu River rises in the central area of Groote Eylandt and flows in a westward direction toward the western coast of the island. The Amagula River has a catchment area of 16,300 ha. An area of 181 ha in the north-east of the Northern EL drains to the Angurugu River via minor drainage lines and overland sheetflow (Figure 3). This area will not be disturbed by project activities.

## 2.3 SURFACE WATER USES AND ENVIRONMENTAL VALUES

The surface water resources in the vicinity of the project site currently support a range of environmental values including aquatic ecosystems and human uses. The existing environmental values relevant to the project surface water setting have been identified from a review of local and downstream land uses, stakeholder consultation and through reference to published information (NRETAS, 2009).

The surface water environmental values relevant to the project are:

- High conservation value aquatic ecosystems;
- Recreational use, including swimming and aesthetic values;
- Human consumption (i.e. drinking water); and
- Cultural values.

The EIS Surface Water Section provides a detailed assessment of these values.

# 3 METHODOLOGY

This section describes the methodology for collection and interpretation of baseline surface geomorphology, water flow and quality data relevant to the project.

## 3.1 BASELINE SURFACE WATER GEOMORPHOLOGY

### 3.1.1 Desktop Assessment

A desktop assessment of the Amagula River and Emerald River catchments was undertaken to identify drainage channels, riparian areas and surface water features relevant to the project.

The desktop assessment included the following:

- Review of a digital elevation model (obtained from LiDAR survey data, 2013) to derive an initial understanding of key watercourse characteristics including bed slope, hydraulic gradient, channel widths and depths;
- Review of recent aerial photography to identify visible features relevant to watercourse geomorphology; and
- Review of available literature relating to the geology, hydrogeology and geomorphology of Groote Eylandt.

The findings of the desktop assessment informed the development of a watercourse geomorphology field survey.

### 3.1.2 Field Survey

A field survey was undertaken to confirm the baseline geomorphic condition of key watercourses within the project site and surrounding area. The survey was conducted on 2 and 3 July 2014, and coincided with the early dry season approximately two months after significant sustained rainfall in the project site. The field survey was timed to allow inspection of wet season flow effects on watercourse bed and banks under low flow conditions.

The field survey was conducted in accordance with the *Australian River Assessment System: AusRivAS Physical Assessment Protocol* (AusRivAS Protocol) (Parsons *et. al.,* 2002). The AusRivAS Protocol provides a nationally standardised approach to the assessment of the physical and geomorphological condition of freshwater watercourses. This approach involves undertaking rapid, semi-quantitative assessments of the physical characteristics of watercourses that are indicators or descriptors of the watercourse geomorphology.

Field survey locations were selected based upon the findings of the desktop assessment. Survey locations were targeted to representative watercourse reaches and confluences, major bedform types and 'functional' areas (i.e. areas where geomorphology could be influenced by topographic or geological change). A total of 63 field survey locations were inspected (Figure 5). Table 1 provides a summary of the distribution of survey sites.

**Table 1**
**Distribution of Field Survey Locations**

| Watercourse | Field Survey Location | | | |
|---|---|---|---|---|
| | Northern EL | Southern EL | Haul Road Corridor | Downstream of Project Site |
| **Emerald River** | | | | |
| Main Channel | 10 | | 1 | 7 |
| Tributary 1 | 1 | | | |
| Tributary 2 | | 5 | | |
| Tributary 3 | | | 1 | |
| Overbank Areas & Minor Drainage Features | 4 | 3 | | 4 |
| **Amagula River** | | | | |
| Main Channel | | | | 6 |
| Tributary 1 | | 6 | | |
| Tributary 2 | | 12 | | |
| Overbank Areas & Minor Drainage Features | | 1 | | 2 |
| **Total** | **15** | **27** | **2** | **19** |

Field survey locations were each inspected at several discrete geomorphology survey sites. The following information was collected at each geomorphology survey site:

- General site information including coordinates and site ID;
- An assessment of channel shape, width, land use and physical influences;
- A description of the physical barriers such as bars, debris, channel modifications and artificial features;
- A detailed description of channel shape and banks including bank shape, height, width, slope, material and stability/erosion;
- Water observations including presence and depth of water, flow characteristics and observed contamination;
- Stream bed characteristics including bedform features, compaction, rock controls and stability/erosion; and
- Representative photographic records.

Appendix A presents figures showing the location of each geomorphology survey site, and provides field sheets detailing the information collected at each site.

The results were used to compile a geomorphic description of each watercourse. This description is presented in Section 4.

## 3.2 BASELINE SURFACE WATER FLOW

### 3.2.1 Data Sources

The Northern Territory Department of Land Resource Management (DLRM) Water Data Portal was reviewed to determine the availability of surface water flow data.

The DLRM Water Data Portal indicates that surface water level and flow were historically recorded at seven gauging stations across Groote Eylandt. All gauging stations on Groote Eylandt are recorded as currently inactive, with the last station on the island closing in 2003.

Two historic gauging stations (as shown on Figure 4) are located downstream of project activities and were utilised to provide historic surface water flow data. Table 2 provides a summary of these stations.

**Table 2**
**Emerald River and Amagula River Gauging Stations**

| **Station Number** | G9290005 | G9290211 |
|---|---|---|
| **Station Name** | Amagula River at Ripplestone Gorge | Emerald River at Old BHP Camp |
| **Status** | Inactive | Inactive |
| **Period of Gauging** | 22 Nov 1969 to 17 Aug 1983 | 20 Dec 1963 to 07 Oct 1988 |
| **Coordinates (Lat, Long)** | 136.568, -14.132 | 136.457, -14.077 |
| **Gauged Catchment** | Amagula River | Emerald River |
| **Gauged Catchment Area** | 116 $km^2$ | 79 $km^2$ |
| **Gauge Datum** | Site datum | Site datum |
| **Cease to Flow Depth** | 0.690 m | 1.752 m |

Of the remaining five historic stations on Groote Eylandt, three are tidal gauges located in coastal waters on the north and north-west of the island, and two are located on the Angurugu River. These stations are not relevant to describing the surface water regime associated with the project site, and are not discussed further.

### 3.2.2 Data Collection

Stream flow and level gauging datasets were retrieved from the DLRM Water Data Portal for gauging stations G9290005 and G9290211. These datasets are summarised in Table 3.

**Table 3**
**Surface Water Flow and Level Data**

| Station Reference | Data Period | Parameters Recorded | Number of Records |
|---|---|---|---|
| G9290005: Amagula River at Ripplestone Gorge | 22 Nov 1969 to 17 Aug 1983 | Water level | 9,666 records |
| | | Stream flow | 8,142 records |
| G9290211: Emerald River at Old BHP Camp | 22 Nov 1969 to 26 Jul 1988 | Water level | 22,795 records |
| | | Stream flow | 21,648 records |

### 3.2.3 Data Analysis and Interpretation

Data from each of the stations was reviewed, cleaned and analysed to provide:

- Summary statistics of minimum and maximum stream levels and flow;
- Hydrographs of stream levels and flow; and
- Hydrographs of stream flow and rainfall.

Data analysis results and key trends in surface water flow characteristics are discussed in Section 5.

Local rainfall records have been used alongside the stream gauging data to support this assessment. Rainfall data was historically collected between 1921 and 1989 at the Bureau of Meteorology (BoM) monitoring station at Angurugu (BoM weather station number 014506). This monitoring station provides a rainfall record for the entire duration of recorded flows in the Emerald and Amagula rivers and is therefore the most appropriate monitoring station for the purposes of this assessment.

## 3.3 BASELINE SURFACE WATER QUALITY

A surface water quality monitoring program was established in January 2014 to determine baseline water quality across the project site and the surrounding area.

The surface water quality monitoring program was developed in accordance with the recommended design and analysis procedures for physically and ecologically undisturbed settings described in the National Water Quality Management Strategy Paper 4: *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC & ARMCANZ, 2000a) (ANZECC Guidelines).

The proponent also currently maintains a surface water monitoring program as part of the existing mining operations. This existing surface water monitoring program includes three monitoring locations on the lower and estuarine reaches of the Emerald River (EMP1 to EMP3). Monitoring data collected from the lower and estuarine reaches of the Emerald

River over the duration of the project surface water quality monitoring program has been presented in Appendices B and C for completeness. However, water quality data collected as part of the existing mine surface water monitoring program is not representative of the watercourses in the vicinity of the project site, given that the monitoring sites are well downstream of the project site in the estuarine and lower reaches of the Emerald River. Data from these three monitoring sites has not, therefore, been used to establish baseline conditions for the project.

Water quality data has been collected from within the project site as part of the preparation of the EIS Aquatic Ecology Report. This data is discussed in the EIS Aquatic Ecology Section.

### 3.3.1 Monitoring Program Design

The surface water quality monitoring program comprises seven monitoring sites in the Emerald River catchment and four monitoring sites in the Amagula River catchment. The distribution of these monitoring points is shown on Figure 4.

The monitoring program was designed to establish the background surface water quality prior to commencement of the project, and allow the ongoing collection of water quality data over the life of the project. Monitoring sites were located to provide data from:

- Appropriate reference sites (i.e. sites upstream of project activities or within equivalent watercourses that will remain undisturbed throughout the life of the project);
- Within and downstream of areas potentially affected by project activities; and
- Adjacent to confluences where water quality is affected by the mixing of watercourses.

The rationale for the location of each monitoring site is described in Table 4.

**Table 4**
**Surface Water Quality Monitoring Program Design Rationale**

| Site ID | Coordinates (Easting, Northing) | Rationale |
|---|---|---|
| **Emerald River** | | |
| EMP4 | 661543, 8446192 | Located on the Emerald River – Main Channel.<br>This site is located just downstream of the Emerald River – Tributary 1 confluence, and downstream of the Northern EL.<br>This site is representative of the influence that the Emerald River – Tributary 1 has on the Emerald River – Main Channel water quality. |
| EMP5 | 666021, 8447115 | Located on an upper reach of the Emerald River – Main Channel, and at an upstream point within the Northern EL.<br>This site does not receive any input from significant tributaries and provides baseline water quality data for the Emerald River – Main Channel upstream of any drainage from the Northern EL. |

| Site ID | Coordinates (Easting, Northing) | Rationale |
|---|---|---|
| EMP6 | 662066, 8446975 | Located on the Emerald River – Main Channel.<br>This site is located upstream of the Emerald River – Tributary 1 confluence, and downstream of the Northern EL.<br>This site provides baseline water quality data for the Emerald River – Main Channel downstream of the Northern EL and upstream of any input from significant tributaries. |
| EMP7 | 661536, 8443752 | Located on Emerald River – Tributary 2.<br>This site is located within the Southern EL, and is representative of the Emerald River – Tributary 2 catchment. |
| **Amagula River** | | |
| ARMP1 | 671046, 8440313 | Located on the Amagula River – Main Channel.<br>This site is located upstream of both the Southern EL and the Amagula River – Tributary 2 confluence.<br>This site is representative of the Amagula River – Main Channel upstream from any drainage from the Southern EL or any significant tributaries. |
| ARMP2 | 668542, 8439223 | Located on the Amagula River – Main Channel.<br>This site is located downstream of the Amagula River – Tributary 2 confluence, and upstream of the Amagula River – Tributary 1 confluence.<br>This site is representative of the Amagula River – Tributary 2 catchment effects on Amagula River – Main Channel water quality. |
| ARMP3 | 664091, 8436634 | Located on the Amagula River – Main Channel.<br>This site is located downstream of the Amagula River – Tributary 1 confluence, adjacent to the Wurrumenbumanja outstation.<br>This site is representative of the Amagula River – Tributary 1 catchment effects on Amagula River – Main Channel water quality. |
| ARMP4 | 665958, 8437674 | Located on the Amagula River – Main Channel.<br>This site is located downstream of the Amagula River – Tributary 1 confluence, adjacent to the Leske Pools Swimming Hole.<br>This site is representative of the Amagula River – Tributary 1 catchment effects on Amagula River – Main Channel water quality. |

### 3.3.2 Monitoring Program Frequency

The monitoring program includes monthly field testing and sample collection events from each of the monitoring points. The timing and coverage of the monitoring events completed to date is summarised in Table 5.

**Table 5**
**Water Quality Monitoring Events**

| Monitoring Round | Monitoring Start Date | Emerald River Monitoring Points Tested/Sampled | Amagula River Monitoring Points Tested/Sampled |
|---|---|---|---|
| Round 1 | 24/01/2014 | EMP4-7 | ARMP 1-4 |
| Round 2 | 21/02/2014 | EMP4-7 | ARMP 1-4 |
| Round 3 | 21/03/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 4** | 02/05/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 5 | 30/05/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 6 | 24/06/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 7 | 25/07/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 8 | 20/08/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 9 | 24/09/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 10 | 15/10/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 11 | 12/11/2014 | EMP4, EMP6-7* | ARMP 1-4 |
| Round 12 | 10/12/2014 | EMP4, EMP6-7* | ARMP 1-4 |

** EMP 5 dry during monitoring round*
*** Round 4 delayed from late April to early May (i.e. 2 days) to allow for safe access to monitoring sites. Despite access constraints, a 4 week interval between Round 4 and Round 5 was able to be maintained.*

The monitoring program provides data for 12 contiguous monthly monitoring events and a complete seasonal cycle (wet-dry-wet season). The monitoring program is planned to continue throughout 2015.

### 3.3.3 Monitoring Protocol

All fieldwork and sampling was undertaken by EcOz Environmental Services in accordance with relevant guidelines and standards, including:

- *AS/NZS 5667.1:1998 Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.*
- *AS/NZS 5667.6:1998 Water Quality – Sampling – Guidance on sampling of rivers and streams.*
- ANZECC & AMRCANZ (2000a). National Water Quality Management Strategy Paper 4: *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*
- ANZECC & AMRCANZ (2000b). National Water Quality Management Strategy Paper 7: *Australian Guidelines for Water Quality Monitoring and Reporting.*

Field analysis was undertaken using hand-held instruments. These instruments are factory calibrated by an ISO 9001 accredited provider at six month intervals and field calibrated using standard solutions in accordance with manufacturer guidelines.

Water samples for laboratory analysis were collected using laboratory-supplied sample bottles appropriate for the intended analyses. Samples were handled and preserved in accordance with laboratory mandated requirements. Care was taken to ensure no cross contamination of sample containers or equipment, and that sample containers, preservatives and samples were appropriately cooled and/or refrigerated at all times. Samples were dispatched from site via overnight air freight in order to ensure compliance with laboratory holding times and maintain sample integrity. Sample handling, transport, delivery and analysis were conducted under strict chain of custody controls and procedures.

Additional Quality Assurance/Quality Control (QA/QC) practices were adopted in accordance with the *Australian Guidelines for Water Quality Monitoring and Reporting* (ANZECC & ARMCANZ, 2000b). During each monitoring round additional samples were collected as follows:

- A blank sample was prepared to identify the presence of any contamination during the sampling process. Blank samples were prepared using deionised water and handled and preserved in the same manner as field samples. Blank samples were prepared at a frequency consistent with ANZECC & ARMCANZ (2000b) guidance (i.e. approximately 1 blank per 10 samples).
- A duplicate sample was collected to identify the magnitude of any error occurring between sampling and sample analysis. Duplicate samples were collected by dividing a sample into two sub-samples.

All samples, duplicates and blanks were analysed by a NATA-accredited laboratory (ALS Environmental, Brisbane). The analytical procedures used by the laboratory have been developed from established internationally recognized procedures such as those published by the Standards Association of Australia, the National Environmental Protection Measure, US Environmental Protection Agency and the American Public Health Association. Laboratory QA/QC practices included analysis of method blanks, laboratory control samples, matrix spikes and regular sample surrogates.

The results of these QA/QC practices and tests demonstrated that the data is suitable and fit for purpose. Minor variations and anomalies observed were typically within experimental variation of the analytical methods applied or attributable to analytical procedures. QA/QC results confirmed no significant errors or contamination associated with the blank or duplicate samples.

### 3.3.4 Water Quality Testing and Analysis

Field testing and water sample analysis included a range of physical and chemical parameters that can directly or indirectly stress biota. Analysis also included a range of potential toxicants. These stressors and toxicants are presented in Table 6.

**Table 6**
**Water Quality Monitoring Parameters**

| Suite | Parameter | Effect[1] |
|---|---|---|
| **Field Testing** | | |
| **Physico-chemical Parameters** | pH, Redox Potential (ORP), Electrical Conductivity (EC), Total Dissolved Solids (TDS), Salinity, Turbidity, Temperature, Dissolved Oxygen | Stressor |
| **Laboratory Analysis** | | |
| **Total and Dissolved Metals** | Aluminium (Al), Arsenic (As), Barium (Ba), Beryllium (Be), Boron (B), Cadmium (Cd), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Mercury (Hg), Lead (Pb), Manganese (Mn), Nickel (Ni), Selenium (Se), Uranium (U), Vanadium (V), Zinc (Zn) | Toxicant |
| **Suspended Particulate Matter** | Suspended Solids (SS) | Stressor |
| **Physico-chemical parameters** | Total Hardness as $CaCO_3$, Bicarbonate Alkalinity as $CaCO_3$, Carbonate Alkalinity as $CaCO_3$, Hydroxide Alkalinity as $CaCO_3$, and Total Alkalinity as $CaCO_3$ | Stressor |
| **Ions** | Sulphate as $SO_4$, Chloride (Cl), Calcium (Ca), Magnesium (Mg), Potassium (K), Sodium (Na), Ionic Balance, Total Anions, Total Cations | Stressor |
| **Nutrients** | Total Nitrogen (N), Nitrate and Nitrite, Total Kjeldahl Nitrogen (KN), Total Phosphorus (P) | Stressor |
| **Petroleum hydrocarbons** | C10-14, C15-28, C29-36, C10-40 | Toxicant |

[1] *As defined in the ANZECC Guidelines*

### 3.3.5 Data Analysis and Interpretation

A 12 month dataset has been collected from the monitoring program between January and December 2014 (inclusive). A summary of the surface water quality results for key physical and ionic water quality parameters, and dissolved metals and metalloids is presented in Section 6. The full results of field and laboratory reports, including total (unfiltered) metals, hydrocarbons and nutrients are presented in Appendix B.

The water quality data were collated and analysed in accordance with the ANZECC Guidelines recommendations for setting baseline conditions in effectively unmodified or other highly-valued ecosystems.

Data were initially screened to identify any key parameters that were not present above the applied limits of reporting. For those parameters present at levels equal to or above the applied limits of reporting, the 12 months of measured data was analysed for both the Amagula River and Emerald River to determine seasonal data trends and differences in water quality across the length of the each watercourse.

The ANZECC Guidelines recommend that pristine aquatic ecosystems or systems with naturally enriched geology are afforded a high level of protection such that there is no detectable change in the ecosystem, beyond natural variability. The ANZECC Guidelines recommend that one standard deviation in the median baseline conditions is a suitably conservative marker of natural variation in water quality.

For each monitoring location, the full dataset was analysed to determine the baseline water quality, extent of natural variation and other key statistics, as follows:

- Sample population and non-detections;
- Minimum and maximum recorded values to determine the data range;
- Median ($50^{th}$ percentile) of recorded values to represent the baseline water quality;
- Standard deviation from the median to represent the limit of natural variation in the data; and
- $80^{th}$ percentile of recorded values (as an alternative to standard deviation) as a means of indicating deviation from the median.

To ensure that natural variation is fully accounted for, no additional outlier removal, distributional assumptions, or data manipulation has been applied to these statistics. The tabulated statistics for each monitoring location are presented in Appendix C. For the purposes of this data analysis, all monitoring locations were analysed as independent datasets and non-detections were substituted with the relevant limit of reporting.

This approach is appropriate to the project setting, in which the background concentrations of certain parameters (e.g. metals such as manganese) are known to be naturally elevated and highly variable due to geological enrichment. The geological setting of the project is discussed further in the EIS Project Description Section.

The water quality baseline is based on 12 continuous months of water quality monitoring data. This baseline will be reviewed once 24 continuous months of data is available in accordance with the ANZECC Guidelines.

Baseline data for each monitoring location have also been screened against relevant guideline values for drinking water (NHMRC & NRMMC, 2011) and recreational use (ANZECC Guidelines). The ANZECC Guidelines do not provide guideline values for the assessment pristine aquatic ecosystems or systems with naturally enriched geology.

# 4 BASELINE WATERCOURSE GEOMORPHOLOGY RESULTS

## 4.1 EMERALD RIVER GEOMORPHOLOGY

The baseline geomorphological characteristics and condition of the Emerald River and its tributaries are summarised in Table 7.

**Table 7**
**Summary of Emerald River Baseline Geomorphology**

| Watercourse | Channel | Bed and Banks | Condition |
|---|---|---|---|
| **Main Channel** | Well-defined for the majority of its length.<br>Loses definition, forming an alluvial fan at the Tributary 1 confluence.<br>Channel definition returns downstream of the alluvial fan.<br>Forms pools connected by narrow rock chutes. | Largely controlled by exposed rock. | Unmodified with no significant erosion. |
| **Tributary 1** | Well-defined for the majority of its length.<br>Loses definition, forming an alluvial fan at the Emerald River - Main Channel confluence. | Largely controlled by exposed rock. | Unmodified with no significant erosion. |
| **Tributary 2** | Elevated catchment divide that is characterised by overland sheetflow following unchannelised flowpaths.<br>Flowpaths coalesce and become channelised as they flow north-west across the Southern EL.<br>The channel transitions to an open network of slow moving perennial pools connected by narrow silted channels as it exits the northern boundary of the Southern EL. | Largely controlled by exposed rock. | Unmodified with no significant erosion. |
| **Tributary 3** | Shallow incised gully. | Narrow rocky bed controlled by exposed rock. | Unmodified with no significant erosion. |
| **Overbank Areas & Minor Drainage Features** | Typically characterised by narrow rocky channels.<br>Shallow depressions in the elevated Tributary 2 catchment area. | Largely controlled by exposed rock. | Unmodified with no significant erosion. |

## 4.2 AMAGULA RIVER GEOMORPHOLOGY

The baseline geomorphological characteristics and condition of the Amagula River and its tributaries are summarised in Table 8.

**Table 8**
**Summary of Amagula River Baseline Geomorphology**

| Watercourse | Channel | Bed and Banks | Condition |
|---|---|---|---|
| **Main Channel** | Characterised by broad rocky pools connected by rock chutes and bounded by rock outcrops.<br>Flows through an incised rock outcrop downstream of Southern EL and becomes less defined.<br>A substantial sand bar has formed on the inside of the main channel at the Leske Pools recreational area. | Largely controlled by exposed rock.<br>Rocky banks.<br>The bed of these pools contains a thin layer of mud and silt. | Unmodified with no significant erosion. |
| **Tributary 1** | Characterised by broad rocky pools connected by rock chutes and bounded by rock outcrops. | Largely controlled by exposed rock.<br>Rocky banks.<br>The bed of these pools contains a thin layer of mud and silt. | Unmodified with no significant erosion. |
| **Tributary 2** | Characterised by broad rocky pools connected by rock chutes and bounded by rock outcrops. | Largely controlled by exposed rock.<br>Rocky banks.<br>The bed of these pools contains a thin layer of mud and silt. | Unmodified with no significant erosion. |
| **Overbank Areas & Minor Drainage Features** | Overland flowpaths and minor gullies enter the main channel at several locations. | Largely controlled by exposed rock. | Unmodified with no significant erosion. |

# 5 BASELINE SURFACE WATER FLOW RESULTS

A summary of the maximum and minimum water levels and flow rates recorded at the gauging stations on the Amagula and Emerald Rivers is provided in Table 9. Gauged flow data from these stations have been assessed in the following sections.

**Table 9**
**Summary Statistics for Surface Water Flow Gauging Stations**

| Statistic | | G9290005 Amagula River | G9290211 Emerald River |
|---|---|---|---|
| River Depth[1] | Maximum | 5.252 m | 5.333 m |
| | Minimum | 0.768 m | 1.902 m |
| Flow Rate | Maximum | 7.067 $m^3/s$ | 7.286 $m^3/s$ |
| | Minimum | 0.088 $m^3/s$ | 0.153 $m^3/s$ |
| Days Recorded | | 3,126 days | 6,820 days |

*1 River Depth reported as gauged water level*

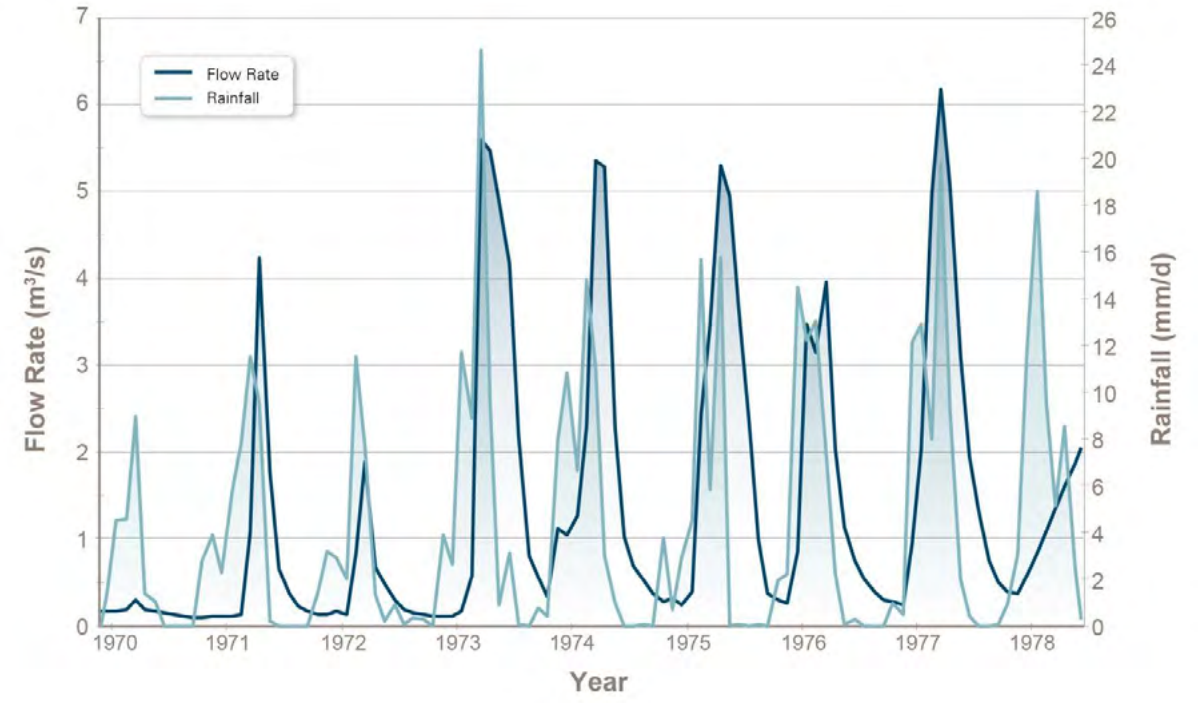
## 5.1 FLOW IN THE AMAGULA RIVER

Graph 1 shows the recorded flow relative to historic rainfall for gauging station G9290005 (Amagula River at Ripplestone Gorge), and Graph 2 shows the recorded water levels and flow data at this station. These graphs are based upon weekly averages of all data points recorded at this location. The maximum and minimum water levels and flow rates recorded at this location are summarised in Table 9.

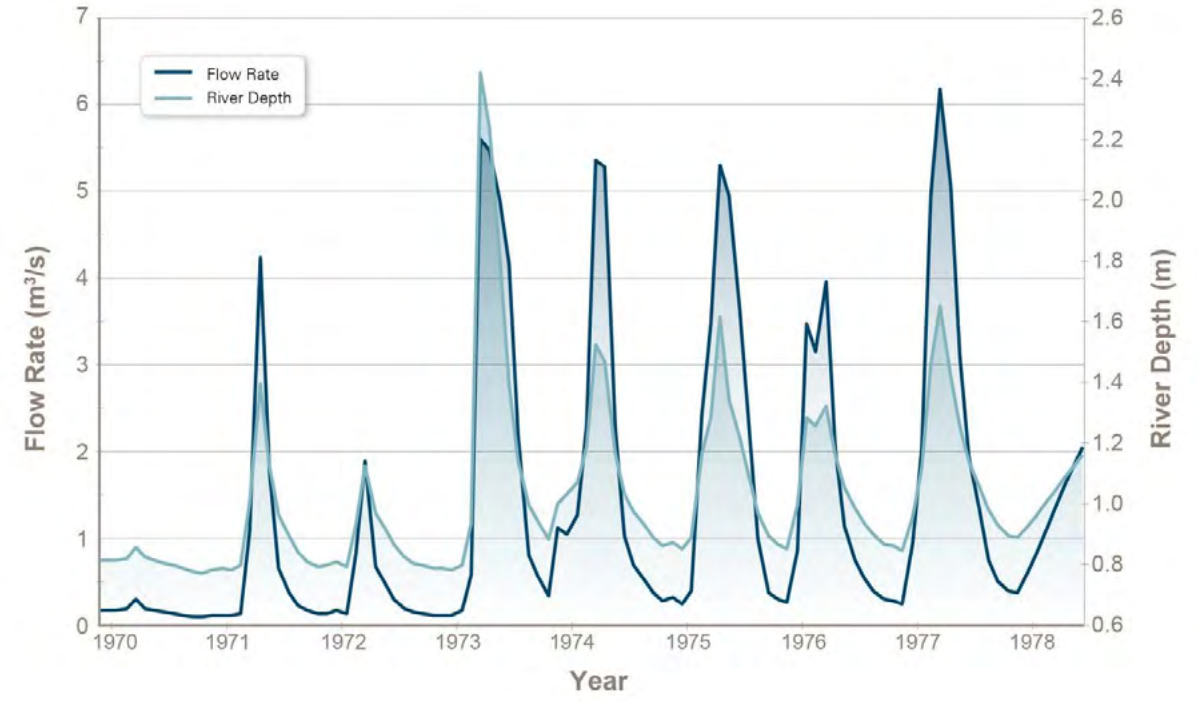
The key trends that are shown in this data are summarised as follows:

- Flow rates between 1971 and 1977 show robust correlation with seasonal rainfall;
- The data show a rapid flow response to the onset of wet season rainfall, reflecting high rate of surface runoff and intensity of rainfall;
- The flow data shows post wet season tailing-off period representing baseflow contribution to watercourse flows through the dry season; and
- The flow rate data shows anomalies in 1970 and 1978 that are likely to be due to the installation and reliability of gauging.

**Graph 1**
**Amagula River Flow Response to Rainfall**




**Graph 2**
**Amagula River Flow and Depth**



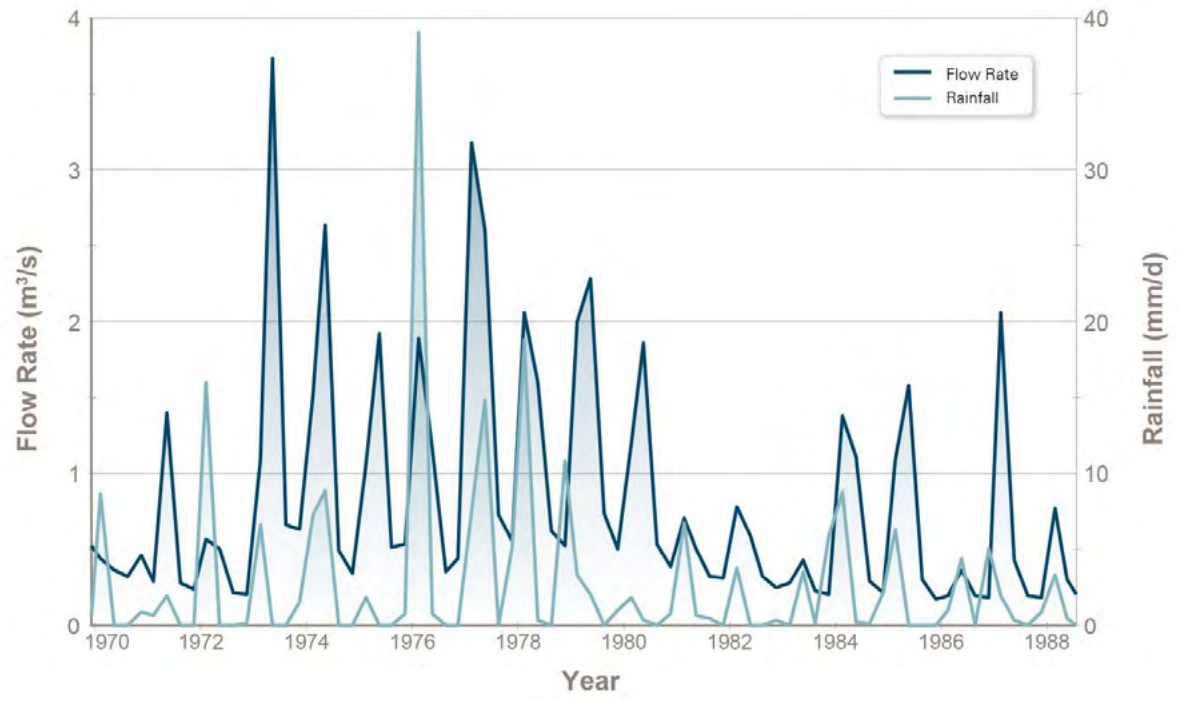
## 5.2 FLOW IN THE EMERALD RIVER

Graph 3 shows the recorded flow relative to historic rainfall for gauging station G9290211 (Emerald River at Old BHP Camp), and Graph 4 shows the recorded water levels and flow data at this station. These graphs are based upon weekly averages of all data points recorded at this location. The maximum and minimum water levels and flow rates recorded at this location are summarised in Table 9.

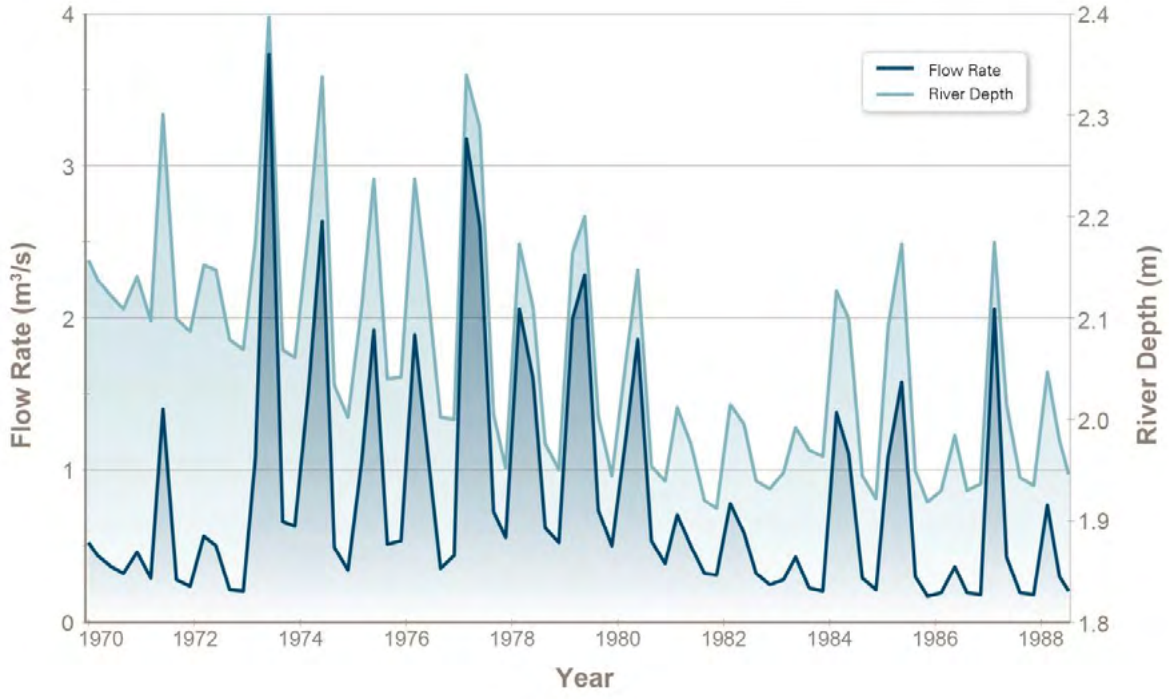
The key trends that are shown in this data are summarised as follows:

- Flow rates generally show response to seasonal rainfall, however, the magnitude of the response is inconsistent (i.e. years of relatively low rainfall show higher flow rates than years with relatively high rainfall);
- The flow rate data may contain anomalies due to reliability of gauging or other factors; and
- Recorded baseflow is generally higher than the baseflows in the Amagula River.

**Graph 3**
**Emerald River Flow Response to Rainfall**



**Graph 4**
**Emerald River Flow and Depth**



# 6 BASELINE SURFACE WATER QUALITY RESULTS

The following sections present the results of the baseline surface water quality monitoring program. The results have been screened and interpreted in accordance with the procedures outlined in the ANZECC Guidelines.

## 6.1 NON-DETECTIONS

The following key water quality parameters were not present above the applied analytical limits of reporting in any of the 12 samples taken from each monitoring location, and baseline concentrations of these water quality parameters are therefore negligible:

***Emerald River (EMP4 to EMP7)***

- Physical Parameters – Alkalinity (as Carbonate and Hydroxide); and
- Dissolved Metals and Metalloids – Arsenic, Beryllium, Cadmium, Chromium, Lead, Selenium, Uranium, Vanadium, Zinc and Mercury.

***Amagula River (ARMP1 to ARMP 4)***

- Physical Parameters – Alkalinity (as Carbonate and Hydroxide);
- Major Cations – Calcium, Magnesium and Potassium; and
- Dissolved Metals and Metalloids – Arsenic, Beryllium, Boron, Cadmium, Chromium, Cobalt, Lead, Selenium, Uranium, Vanadium, Zinc and Mercury.

## 6.2 BASELINE STATISTICS

Appendix C presents detailed baseline water quality statistics for each monitoring location.

The median baseline water quality recorded at each monitoring location is summarised in Table 10 and Table 11. Relevant guideline values for drinking water (NHMRC & NRMMC, 2011) and recreational use (ANZECC Guidelines) are also quoted for reference.

**Table 10**
**Median Emerald River Water Quality**

| Parameter | Units | Limit of Reporting | Default Guideline Values | | Monitoring Location | | |
|---|---|---|---|---|---|---|---|
| | | | Drinking Water | Recreation | EMP4 | EMP6 | EMP7 |
| **Physical and Chemical Parameters** | | | | | | | |
| Suspended Solids | mg/L | 5 | 200[a] | N/V | 5 | 5 | 5 |
| pH | pH units | 0.1 | 6.5 – 8.5[a] | 6.5 – 8.5 | **6.1** | **6.0** | **5.8** |
| Redox Potential | (mV) | 1 | N/V | N/V | 141 | 158 | 157 |
| Electrical Conductivity | (µS/cm) | 1 | N/V | N/V | 68 | 72 | 60 |
| TDS | (g/L) | 0.01 | 0.6[a] | 1 | 0.04 | 0.05 | 0.04 |
| Dissolved Oxygen | (% sat) | 0.1 | 85[a] | 80 | **77** | **74** | **77** |
| Turbidity | (NTU) | 1 | 5[a] | N/V | 3 | 3 | 4 |
| Total Hardness | mg/L | 1 | 200[a] | 500 | 1 | 1 | 1 |
| Bicarbonate Alkalinity | mg/L | 1 | N/V | N/V | 6 | 9 | 6 |
| Carbonate Alkalinity | mg/L | 1 | N/V | N/V | <LoR | <LoR | <LoR |
| Hydroxide Alkalinity | mg/L | 1 | N/V | N/V | <LoR | <LoR | <LoR |
| Total Alkalinity | mg/L | 1 | N/V | N/V | 6 | 9 | 6 |
| **Major Ions** | | | | | | | |
| Total Anions | meq/L | 0.01 | N/V | N/V | 0.4 | 0.4 | 0.4 |
| Total Cations | meq/L | 0.01 | N/V | N/V | 0.3 | 0.3 | 0.3 |
| Sulfate | mg/L | 1 | 250[a] \| 500[h] | 400 | 1 | 1 | 1 |
| Chloride | mg/L | 1 | 250[a] | 400 | 11 | 12 | 10 |
| Calcium | mg/L | 1 | N/V | N/V | 1 | 1 | <LoR |
| Magnesium | mg/L | 1 | N/V | N/V | 1 | 1 | 1 |
| Potassium | mg/L | 1 | N/V | N/V | 1 | 1 | <LoR |
| Sodium | mg/L | 1 | 180[a] | 300 | 9 | 8 | 7 |
| **Metals and Metalloids (Dissolved)** | | | | | | | |
| Aluminium | mg/L | 0.01 | 0.2[a] | 0.2 | 0.01 | 0.01 | 0.01 |
| Arsenic | mg/L | 0.001 | 0.010[h] | 0.050 | <LoR | <LoR | <LoR |
| Barium | mg/L | 0.001 | 2[h] | 1 | 0.004 | 0.006 | 0.007 |
| Beryllium | mg/L | 0.001 | 0.06[h] | N/V | <LoR | <LoR | <LoR |
| Boron | mg/L | 0.05 | 4[h] | 1 | <LoR | 0.05 | <LoR |
| Cadmium | mg/L | 0.0001 | 0.002[h] | 0.005 | <LoR | <LoR | <LoR |
| Chromium | mg/L | 0.001 | 0.05[h] | 0.05 | <LoR | <LoR | <LoR |
| Cobalt | mg/L | 0.001 | N/V | N/V | <LoR | 0.001 | 0.001 |
| Copper | mg/L | 0.001 | 1[a] \| 2[h] | 1 | 0.001 | <LoR | 0.001 |
| Iron | mg/L | 0.05 | 0.3[a] | 0.3 | 0.07 | 0.13 | 0.11 |
| Lead | mg/L | 0.001 | 0.01[h] | 0.05 | <LoR | <LoR | <LoR |
| Manganese | mg/L | 0.001 | 0.1[a] \| 0.5[h] | 0.1 | 0.07 | **0.14** | **0.40** |
| Mercury | mg/L | 0.0001 | 0.001[a] | 0.001 | <LoR | <LoR | <LoR |
| Nickel | mg/L | 0.001 | 0.02[h] | 0.1 | <LoR | 0.001 | <LoR |
| Selenium | mg/L | 0.01 | 0.01[h] | 0.01 | <LoR | <LoR | <LoR |
| Uranium | mg/L | 0.001 | 0.017[h] | N/V | <LoR | <LoR | <LoR |
| Vanadium | mg/L | 0.01 | N/V | N/V | <LoR | <LoR | <LoR |
| Zinc | mg/L | 0.005 | 3[a] | 5 | <LoR | <LoR | <LoR |

*Bold* *Denotes median water quality exceeds the default guideline value for drinking water and/or recreation*
*N/V* *Default guideline value not available for parameter*
*<LoR* *All recorded values below the applied laboratory limit of reporting*
*a* *Drinking Water Guideline Value (aesthetic)*
*h* *Drinking Water Guideline Value (health)*

**Table 11**
**Median Amagula River Water Quality**

| Parameter | Units | Limit of Reporting | Default Guideline Values | | Amagula River | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Drinking Water | Recreation | ARMP1 | ARMP2 | ARMP3 | ARMP4 |
| **Physical and Chemical Parameters** | | | | | | | | |
| Suspended Solids | mg/L | 5 | 200[a] | N/V | 5 | 5 | 5 | 5 |
| pH | pH units | 0.1 | 6.5 – 8.5[a] | 6.5 – 8.5 | **5.1** | **5.3** | **4.8** | **5.6** |
| Redox Potential | (mV) | 1 | N/V | N/V | 149 | 160 | 201 | 157 |
| Electrical Conductivity | (µS/cm) | 1 | N/V | N/V | 59 | 60 | 59 | 56 |
| Total Dissolved Solids | (g/L) | 0.01 | 0.6[a] | 1 | 0.04 | 0.04 | 0.04 | 0.04 |
| Dissolved Oxygen | (% sat) | 0.1 | 85[a] | 80 | **80** | 86 | **50** | 91 |
| Turbidity | (NTU) | 1 | 5[a] | N/V | 3 | 3 | 3 | 3 |
| Total Hardness | mg/L | 1 | 200[a] | 500 | <LoR | <LoR | <LoR | <LoR |
| Bicarbonate Alkalinity | mg/L | 1 | N/V | N/V | 2 | 3 | 3 | 2 |
| Carbonate Alkalinity | mg/L | 1 | N/V | N/V | <LoR | <LoR | <LoR | <LoR |
| Hydroxide Alkalinity | mg/L | 1 | N/V | N/V | <LoR | <LoR | <LoR | <LoR |
| Total Alkalinity | mg/L | 1 | N/V | N/V | 2 | 3 | 3 | 2 |
| **Major Ions** | | | | | | | | |
| Total Anions | meq/L | 0.01 | N/V | N/V | 0.4 | 0.4 | 0.4 | 0.4 |
| Total Cations | meq/L | 0.01 | N/V | N/V | 0.3 | 0.3 | 0.3 | 0.3 |
| Sulfate | mg/L | 1 | 250[a] / 500[h] | 400 | 1 | 1 | 1 | 1 |
| Chloride | mg/L | 1 | 250[a] | 400 | 11 | 12 | 10 | 11 |
| Calcium | mg/L | 1 | N/V | N/V | <LoR | <LoR | 1 | <LoR |
| Magnesium | mg/L | 1 | N/V | N/V | <LoR | <LoR | 1 | <LoR |
| Potassium | mg/L | 1 | N/V | N/V | <LoR | <LoR | 1 | <LoR |
| Sodium | mg/L | 1 | 180[a] | 300 | 6 | 7 | 6 | 7 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | |
| Aluminium | mg/L | 0.01 | 0.2[a] | 0.2 | 0.01 | 0.01 | 0.01 | 0.01 |
| Arsenic | mg/L | 0.001 | 0.010[h] | 0.050 | <LoR | <LoR | <LoR | <LoR |
| Barium | mg/L | 0.001 | 2[h] | 1 | 0.003 | 0.004 | 0.004 | 0.004 |
| Beryllium | mg/L | 0.001 | 0.06[h] | N/V | <LoR | <LoR | <LoR | <LoR |
| Boron | mg/L | 0.05 | 4[h] | 1 | <LoR | <LoR | <LoR | <LoR |
| Cadmium | mg/L | 0.0001 | 0.002[h] | 0.005 | <LoR | <LoR | <LoR | <LoR |
| Chromium | mg/L | 0.001 | 0.05[h] | 0.05 | <LoR | <LoR | <LoR | <LoR |
| Cobalt | mg/L | 0.001 | N/V | N/V | <LoR | <LoR | <LoR | <LoR |
| Copper | mg/L | 0.001 | 1[a] / 2[h] | 1 | <LoR | <LoR | 0.001 | <LoR |
| Iron | mg/L | 0.05 | 0.3[a] | 0.3 | 0.10 | 0.08 | 0.05 | 0.07 |
| Lead | mg/L | 0.001 | 0.01[h] | 0.05 | <LoR | <LoR | <LoR | <LoR |
| Manganese | mg/L | 0.001 | 0.1[a] / 0.5[h] | 0.1 | 0.002 | 0.008 | 0.022 | 0.013 |
| Mercury | mg/L | 0.0001 | 0.001[a] | 0.001 | <LoR | <LoR | <LoR | <LoR |
| Nickel | mg/L | 0.001 | 0.02[h] | 0.1 | 0.001 | 0.001 | <LoR | <LoR |
| Selenium | mg/L | 0.01 | 0.01[h] | 0.01 | <LoR | <LoR | <LoR | <LoR |
| Uranium | mg/L | 0.001 | 0.017[h] | N/V | <LoR | <LoR | <LoR | <LoR |
| Vanadium | mg/L | 0.01 | N/V | N/V | <LoR | <LoR | <LoR | <LoR |
| Zinc | mg/L | 0.005 | 0.2[a] | 5 | <LoR | 0.005 | <LoR | <LoR |

*Bold* *Denotes median water quality exceeds the default guideline value for drinking water and/or recreation*
*N/V* *Default guideline value not available for parameter*
*<LoR* *All recorded values below the applied laboratory limit of reporting*
*a* *Drinking Water Guideline Value (aesthetic)*
*h* *Drinking Water Guideline Value (health)*

## 6.3 BASELINE WATER QUALITY ASSESSMENT

### 6.3.1 Water Quality Trends

In general, the baseline water quality of the Amagula and Emerald Rivers is similar, reflecting the similar geology and conditions across these catchments. The waters within both drainage networks are typically acidic and non-saline, with low turbidity and suspended sediment. Locally elevated levels of sediment and salinity were recorded, although these instances generally coincided with low watercourse flows and remnant pools. This is consistent with the geomorphic assessment which confirmed deposited sediments within the drainage channels are generally localised to remnant pools.

Vegetation breakdown typically exerts an oxygen demand. The data shows sporadic decreases in dissolved oxygen concentrations that reflect this demand. These locally depleted oxygen concentrations are associated with remnant pools rather than flowing waters.

Long-term salinity (as electrical conductivity and total dissolved solids), pH, alkalinity and major ion levels are generally similar throughout the regional drainage network.

Naturally elevated concentrations of several metals are present including aluminium, copper, manganese and zinc. The presence of these metals reflects the enrichment of these metals in the underlying geology. All other metals and metalloid concentrations are at or below the applied laboratory limits of reporting.

### 6.3.2 Water Quality Assessment

#### 6.3.2.1 Drinking Water Quality

Relevant guideline values for drinking water (NHMRC & NRMMC, 2011) are presented in Table 10 and Table 11. Baseline water quality was found to exceed relevant guideline values for drinking water due to acidity and occasionally elevated metal concentrations (i.e. manganese), reduced oxygen saturation and water hardness.

#### 6.3.2.2 Recreational Water Quality

Relevant guideline values for recreational water uses (ANZECC, 2000a) are presented in Table 10 and Table 11. Baseline water quality was found to exceed relevant guideline values for recreational use due to acidity and occasionally elevated metal concentrations (i.e. manganese) and reduced oxygen saturation.

# 7 REFERENCES

ANZECC & ARMCANZ (2000a). National Water Quality Management Strategy Paper 4: *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*

ANZECC & ARMCANZ (2000b). National Water Quality Management Strategy Paper 7: *Australian Guidelines for Water Quality Monitoring and Reporting.*

AS/NZS 5667.1:1998 Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.

AS/NZS 5667.6:1998 Water Quality – Sampling – Guidance on sampling of rivers and streams.

NHMRC & NRMMC (2011). *Australian Drinking Water Guidelines*. Updated December 2014.

Northern Territory Department of Land Resource Management (2014). *Water Data Portal.* Accessed March 2014 at <www.lrm.nt.gov.au/water/water-data-portal>.

Northern Territory Department of Natural Resources, Environment, The Arts and Sport (2009). *Sites of Conservation Significance: Groote Eylandt Group.*

Parsons, M., Thoms, M. and Norris, R. (2002). *Australian River Assessment System: AusRivAS Physical Assessment Protocol*, Monitoring River Heath Initiative Technical Report Number 22, Commonwealth of Australia and University of Canberra, Canberra.

* * *

for
**HANSEN BAILEY**

Ross Edwards
*Senior Environmental Scientist*

Peter Hansen
*Director*

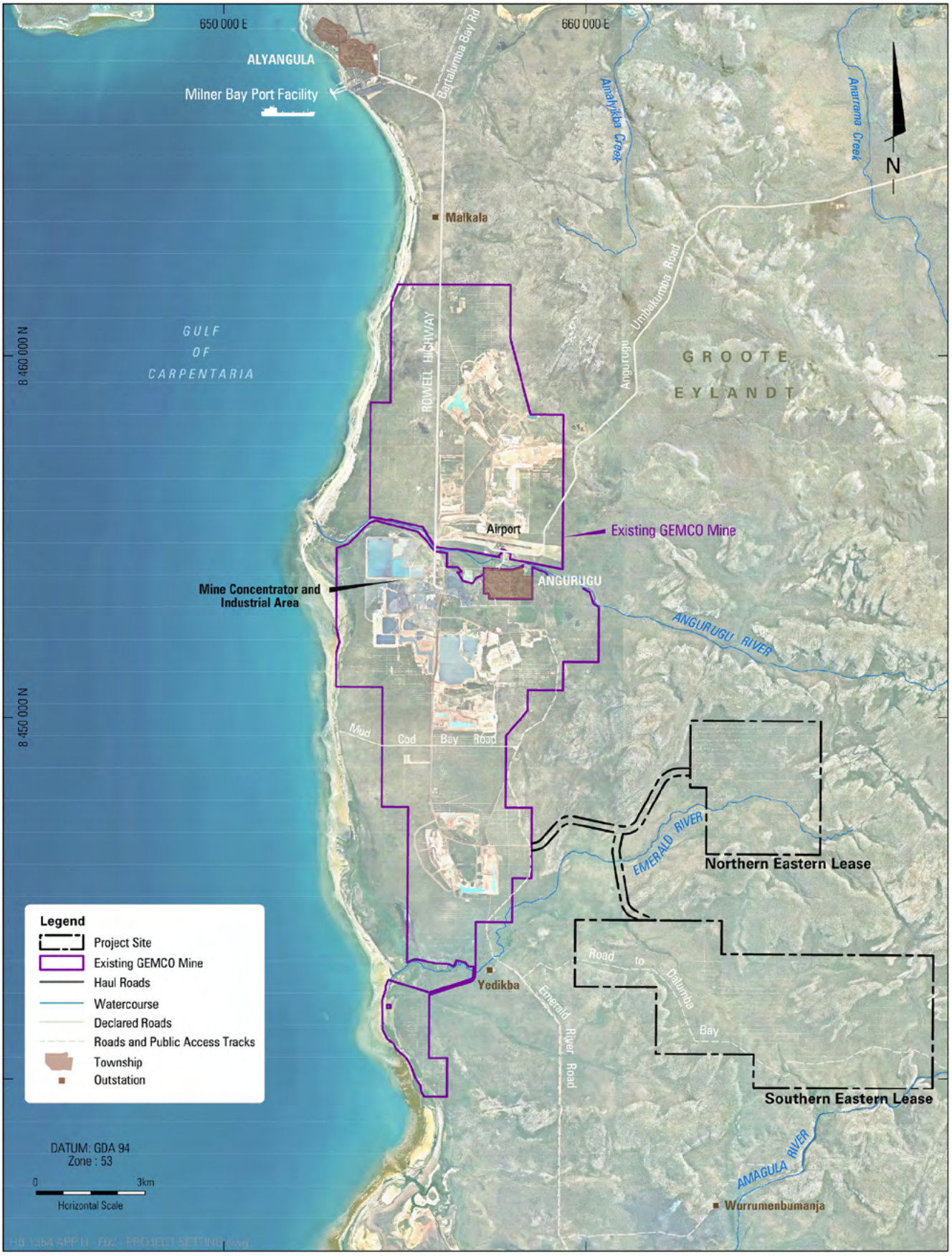
# FIGURES


EASTERN LEASES PROJECT

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

Location Plan

**FIGURE 1**

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Project Setting

**FIGURE 2**


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Regional Catchment Setting

**FIGURE 3**


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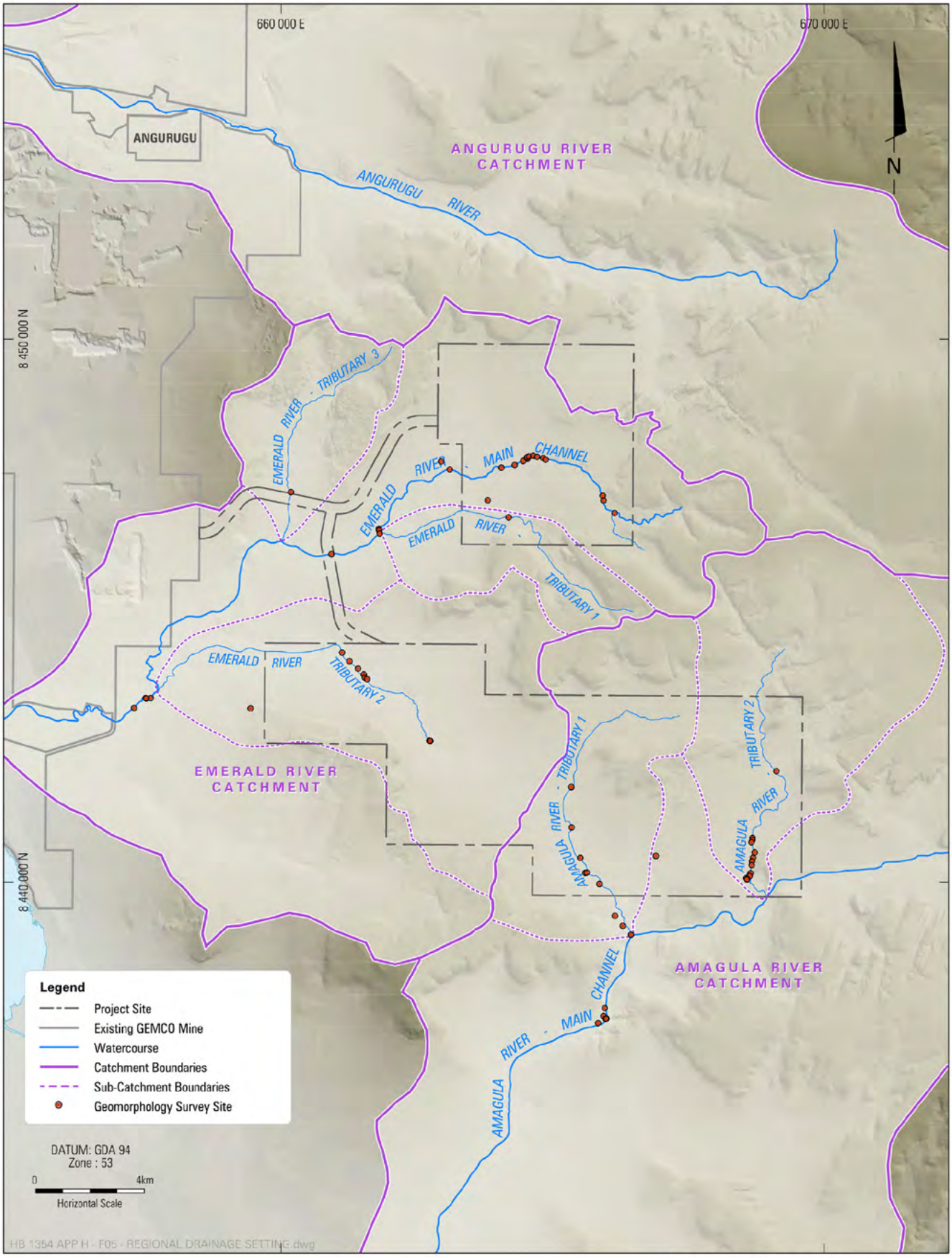
Local Drainage Setting

**FIGURE 4**

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Local Catchment Setting and Geomorphology Survey Sites

**FIGURE 5**

# APPENDIX A

## *Baseline Geomorphology Survey Data*

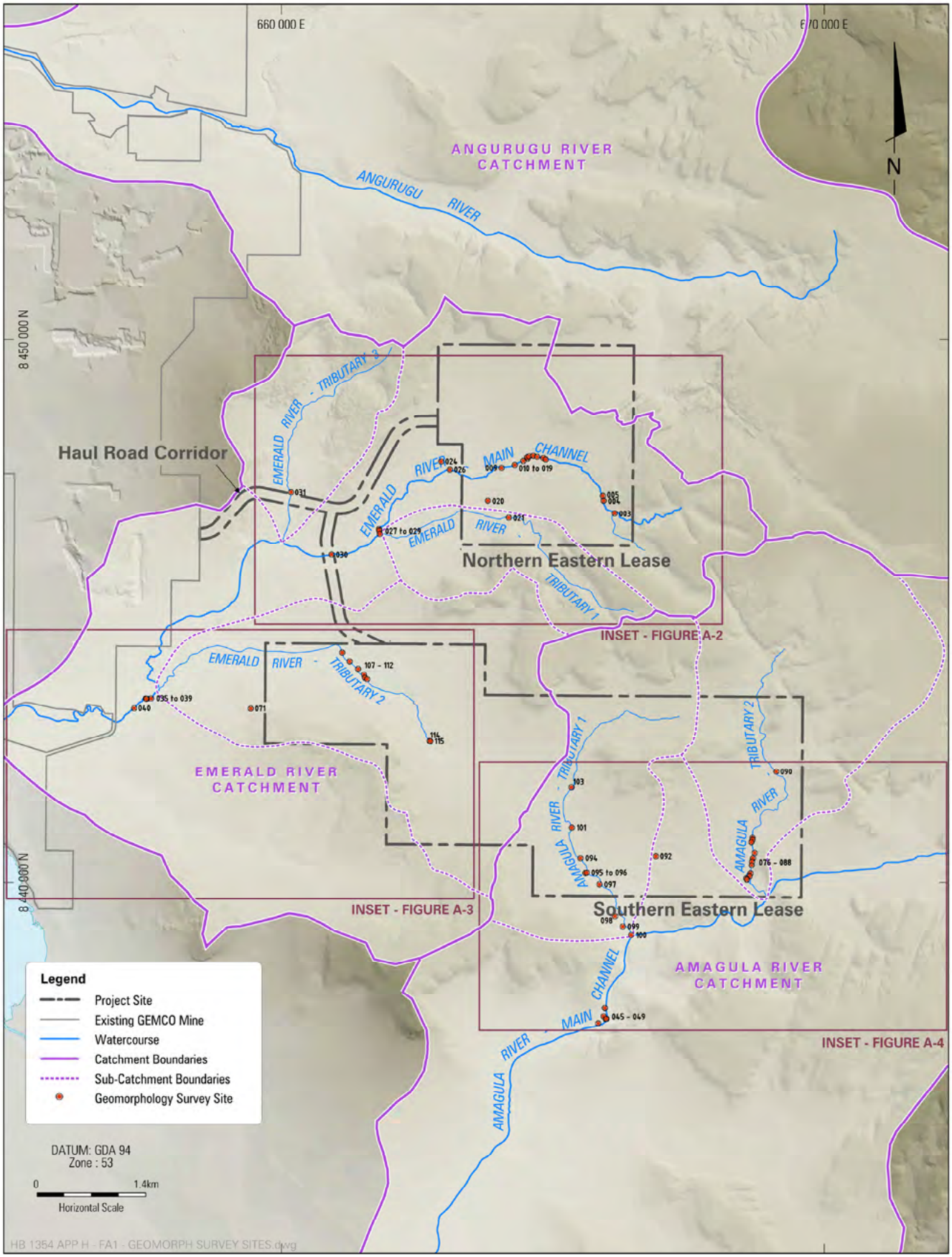
# Appendix A
# Baseline Geomorphology Survey Data

This appendix presents the baseline geomorphology field data. Figures A-1 to A-4 show the locations of the geomorphological survey sites.

Field data is presented for the following watercourses, with sites described in descending order for each watercourse (from upper to lower catchment):

- Emerald River – Main Channel
- Emerald River – Tributary 1
- Emerald River – Tributary 2
- Emerald River – Tributary 3
- Emerald River – Overbank Areas
- Amagula River – Main Channel
- Amagula River – Tributary 1
- Amagula River – Tributary 2
- Amagula River – Overbank Areas

# *Figures*




EASTERN LEASES PROJECT

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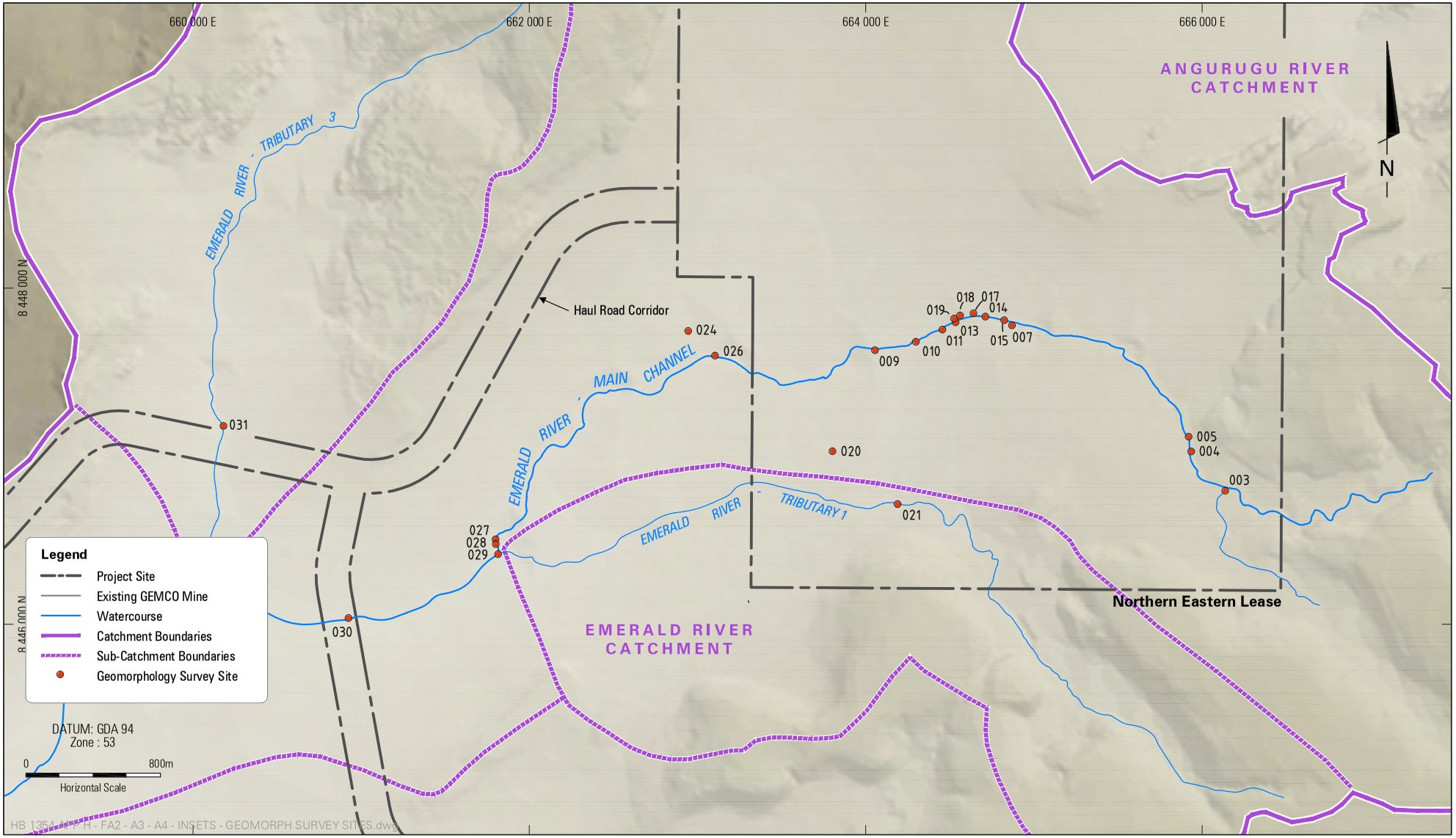
Geomorphology Survey Sites

**FIGURE A-1**




EASTERN LEASES PROJECT

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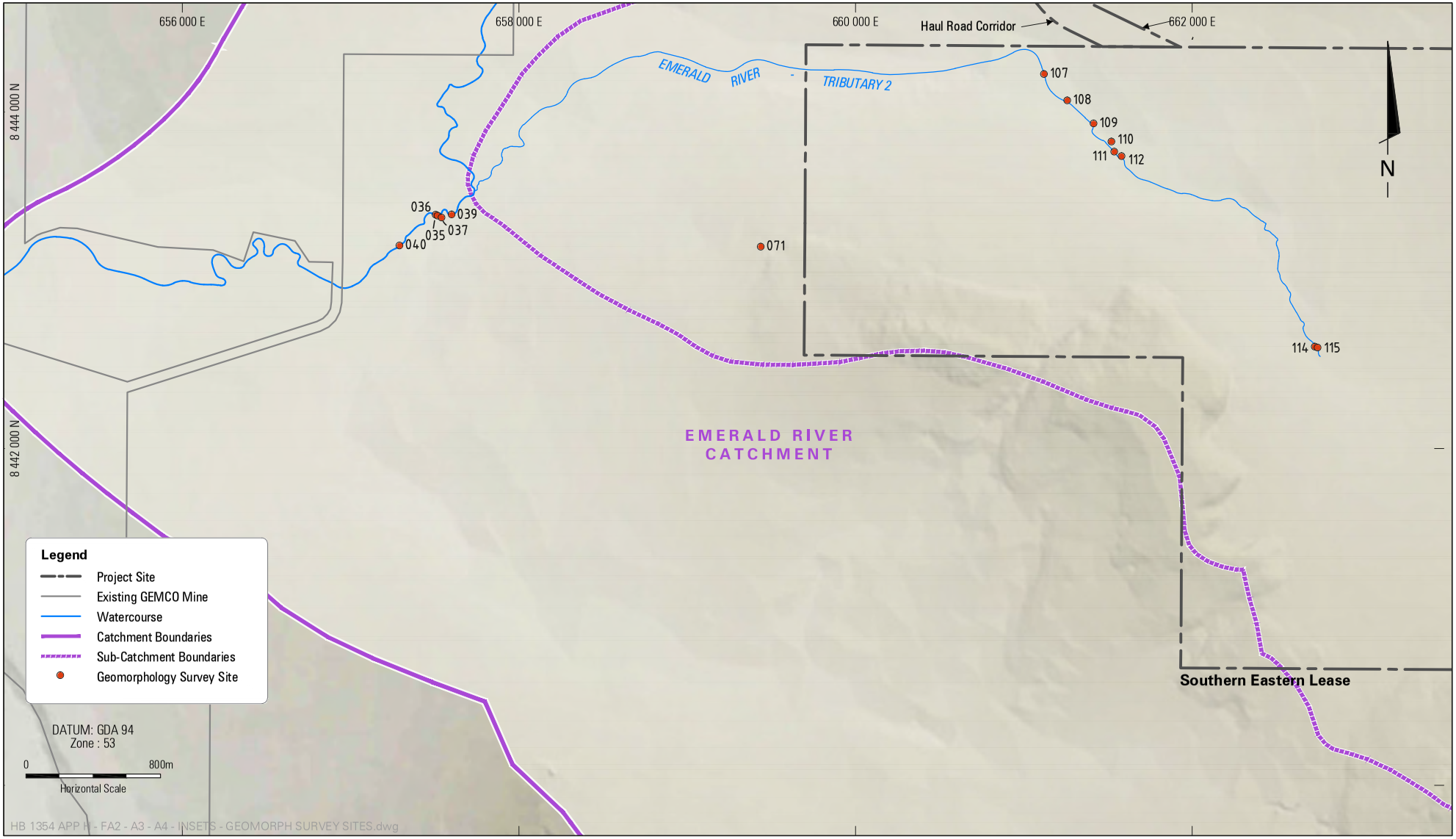
Geomorphology Survey Sites - INSET

**FIGURE A-2**




EASTERN LEASES PROJECT

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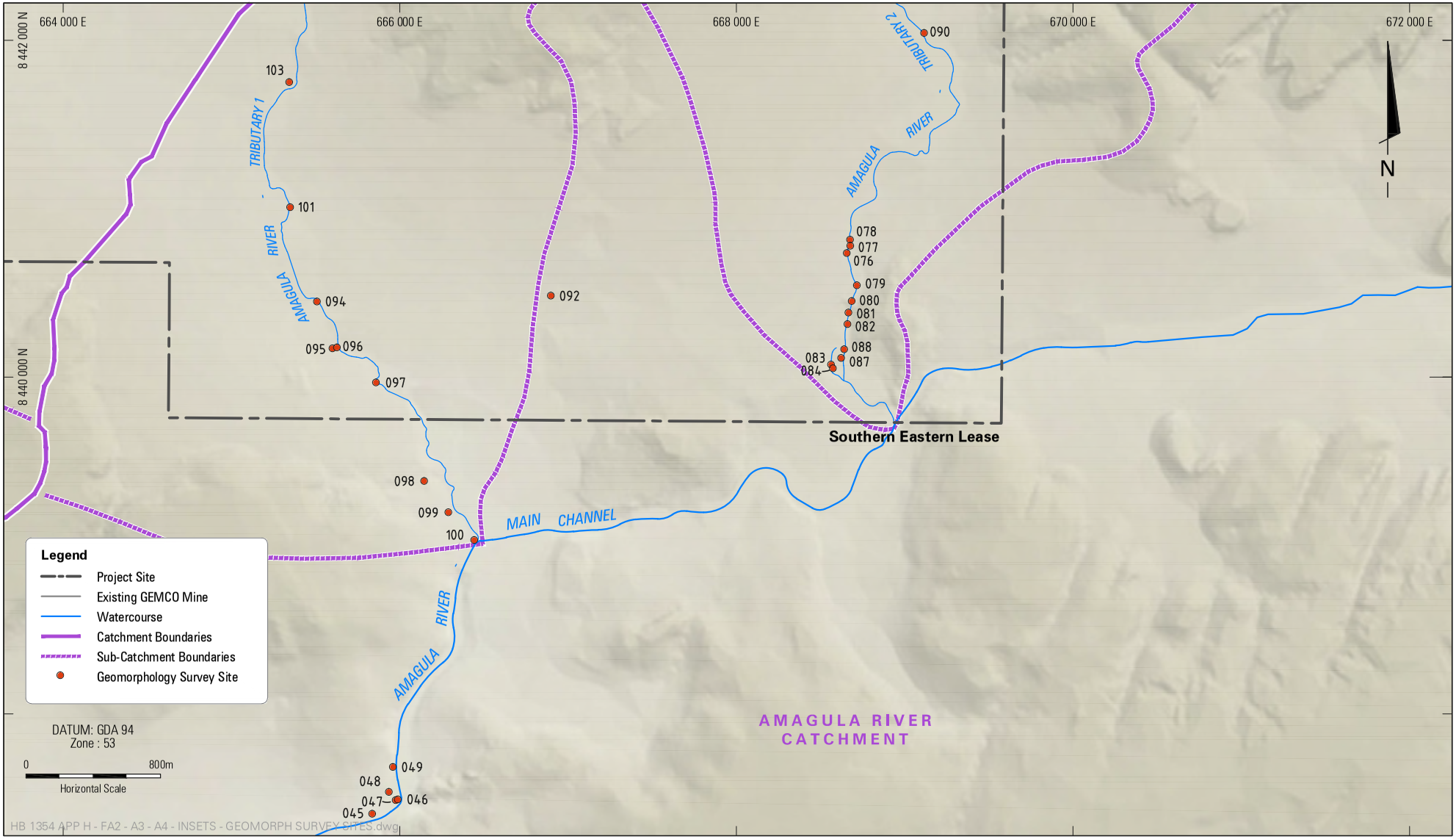
Geomorphology Survey Sites - INSET

**FIGURE A-3**

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Geomorphology Survey Sites - INSET

**FIGURE A-4**

# *Field Datasheets*

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 003 | **Monitoring Date** | 1/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.044651 |
| **Location ID** | ER-ERMC-01 | | 136.538584 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upper reaches of Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Low | Bank Width (m) | 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Gravel and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with rock controlled bed and in channel vegetation

Downstream showing defined channel with rock controlled bed and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 004 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.042551 |
| **Location ID** | ER-ERMC-02 | | 136.536689 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Gravel and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing undefined channel with rock controlled bed

Downstream showing undefined channel with rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 005 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.041765 |
| **Location ID** | ER-ERMC-03 | | 136.536548 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex, lower bench | Bank Height (m) | 2 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing undefined channel with in channel vegetation

Downstream showing defined channel with rock controlled bed.

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 007 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.035834 |
| **Location ID** | ER-ERMC-04 | | 136.526775 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 8 |
| Bank Slope | Moderate | Bank Width (m) | 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Sand and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with rock controlled bed and in channel vegetation

Downstream showing defined channel with rock controlled bed and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 015 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.035568 |
| **Location ID** | ER-ERMC-05 | | 136.526352 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 4 |
| Bank Slope | Moderate to low | Bank Width (m) | 12 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing overland flow path and no defined channel with in channel vegetation

Downstream showing overland flow path and no defined channel with in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 014 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.035384 |
| **Location ID** | ER-ERMC-06 | | 136.52531 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 10% |
| Extent of Bars (%) | N/A | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 4 |
| Bank Slope | Moderate to low | Bank Width (m) | 10 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Turbid |
| Water Oils | None | Water Odours | None |
| Sediment Oils | Organic | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 013 | **Monitoring Date** | U01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.035693 |
| **Location ID** | ER-ERMC-07 | | 136.523675 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | Mid channel rock bar | Large Woody Debris | 20% |
| Extent of Bars (%) | 5% | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 4 |
| Bank Slope | Moderate to low | Bank Width (m) | 10 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with in channel vegetation.

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 011 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.03675 |
| **Location ID** | ER-ERMC-08 | | 136.5215 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 1 |
| Bank Slope | Low | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Sand over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 0.5 |
| Water Depth (m) | 0.1 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water and rock controlled bed.

Downstream showing defined channel with pooled water and rock controlled bed.

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 010 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.03675 |
| **Location ID** | ER-ERMC-09 | | 136.5215 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 5% |
| Extent of Bars (%) | None | Artificial Features | Road crossing |
| Particle Size on Bars | N/A | Channel Modifications | Road crossing |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 3 |
| Bank Slope | Moderate to low | Bank Width (m) | 25 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 1 |
| Water Depth (m) | 0.2 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and riffle | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Fines and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water and road crossing

Upstream showing defined channel with pooled water and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 009 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.037218 |
| **Location ID** | ER-ERMC-10 | | 136.519247 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 3 |
| Bank Slope | Moderate to low | Bank Width (m) | 25 |
| Factors Affecting Bank Stability | None | Bank Material | Mud and sand |
| Artificial Bank Protection | None | Substrate Composition | Mud and sand |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and riffle | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing overland flow path and defined channel with pooled.

Downstream showing overland flow path and defined channel with pooled.

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 026 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.037569 |
| **Location ID** | ER-ERMC-11 | | 136.510446 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <10% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 4 to 5 |
| Bank Slope | Moderate to low | Bank Width (m) | 10 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and glide | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 027 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.047513 |
| **Location ID** | ER-ERMC-12 | | 136.498426 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <10% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 4 to 5 |
| Bank Slope | Moderate to low | Bank Width (m) | 4 to 7 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and glide | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

| | |
|---|---|
|  |  |
| Upstream showing defined channel with in channel vegetation | Downstream showing defined channel with pooled water |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 029 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.047773 |
| **Location ID** | ER-ERMC-13 | | 136.498449 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 10% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 3 |
| Bank Slope | Low | Bank Width (m) | 15 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 4 |
| Water Depth (m) | 0.5 to 1 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and glide | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 030 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.051801 |
| **Location ID** | ER-ERMC-14 | | 136.490356 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Downstream of confluence with Emerald River – Tributary 1 | | |
| **Physical Assessment** | | | |
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |
| **Physical Barriers** | | | |
| Type of Bars | None | Large Woody Debris | 10% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |
| **Channel Shape & Banks** | | | |
| Bank Shape | Convex | Bank Height (m) | 3 to 4 |
| Bank Slope | Low | Bank Width (m) | 6 to 10 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |
| **Water Observations** | | | |
| Water Level | Low | Water Surface Width (m) | 3 to 4 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |
| **Stream Bed** | | | |
| Extent of Bedform Features | Pool and glide | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 039 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.075912 |
| **Location ID** | ER-ERMC-15 | | 136.459724 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Downstream of confluence with Emerald River – Tributary 2 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | Road Crossing |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | Point, vegetated | Large Woody Debris | 10% |
| Extent of Bars (%) | 40 | Artificial Features | Bridge in vicinity |
| Particle Size on Bars | Sand and silt | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Runs and backwaters | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 036 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.075927 |
| **Location ID** | ER-ERMC-16 | | 136.458855 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Downstream of confluence with Emerald River – Tributary 2 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | Road Crossing |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | Point, vegetated | Large Woody Debris | 10% |
| Extent of Bars (%) | 40 | Artificial Features | Bridge in vicinity |
| Particle Size on Bars | Sand and silt | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Low to vertical | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Runs and backwaters | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with backwaters

Downstream showing defined channel with backwaters

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 035 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.075977 |
| **Location ID** | ER-ERMC-17 | | 136.458951 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Downstream of confluence with Emerald River – Tributary 2 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | Road Crossing |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | Point, vegetated | Large Woody Debris | 10% |
| Extent of Bars (%) | 40 | Artificial Features | Bridge in vicinity |
| Particle Size on Bars | Sand and silt | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 to 3 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Runs and backwaters | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with backwaters

Downstream showing defined channel with backwaters

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 040 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.077593 |
| **Location ID** | ER-ERMC-18 | | 136.456873 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Main Channel | | |
| **Relative Location** | Downstream of confluence with Emerald River – Tributary 2 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | Road Crossing |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 10% |
| Extent of Bars (%) | None | Artificial Features | Bridge in vicinity |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 to 5 |
| Water Depth (m) | 0.1 to 1 | Turbidity (Visual) | Plant leachate, silt |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Glide and riffle | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with flowing water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 021 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.045489 |
| **Location ID** | ER-ERT1-01 | | 136.520546 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 1 | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 3 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 1 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and gravel over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and gravel over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate to low | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Sand and gravel | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing overland flow path and no defined channel

Downstream showing defined channel with sandy bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 112 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.072556 |
| **Location ID** | ER-ERT2-01 | | 136.496563 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 10% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 2 to 4 |
| Bank Slope | Low | Bank Width (m) | 2 to 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 0.5 (inflow) to 2 (pool) |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Black, plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Backflows and pools | Bedrock Outcrops | No |
| Bed Compaction | Low to moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing pooled water

Downstream pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 111 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.072313 |
| **Location ID** | ER-ERT2-02 | | 136.496173 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 50% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 2 to 4 |
| Bank Slope | Low | Bank Width (m) | 2 to 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 1 (inflow) to 4 (pool) |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Turbid, plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Backflows and pools | Bedrock Outcrops | No |
| Bed Compaction | Low to moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing inlet and pooled water

Downstream showing pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 109 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.07081 |
| **Location ID** | ER-ERT2-03 | | 136.495022 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <20% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 1 to 3 |
| Bank Slope | Low | Bank Width (m) | 2 to 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 1 (inflow) to 4 (pool) |
| Water Depth (m) | 1 | Turbidity (Visual) | Clear |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and riffles | Bedrock Outcrops | No |
| Bed Compaction | Low to moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water and in stream vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 108 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.069573 |
| **Location ID** | ER-ERT2-04 | | 136.493563 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <20% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 1 to 3 |
| Bank Slope | Low | Bank Width (m) | 2 to 8- |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 1 (inflow) to 4 (pool) |
| Water Depth (m) | 1 | Turbidity (Visual) | Clear |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and riffles | Bedrock Outcrops | No |
| Bed Compaction | Low to moderate | Sediment Angularity | N/A |
| Sediment Matrix | Fines | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water and in stream vegetation

Downstream showing defined channel with pooled water and in stream vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 107 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.068164 |
| **Location ID** | ER-ERT2-05 | | 136.492279 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <25% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 1 to 3 |
| Bank Slope | Low | Bank Width (m) | 2 to 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 1 (inflow) to 4 (pool) |
| Water Depth (m) | 1 | Turbidity (Visual) | Turbid, silt |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and riffles | Bedrock Outcrops | No |
| Bed Compaction | Low to moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 031 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.041509 |
| **Location ID** | ER-ERT3-01 | | 136.483409 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 3 | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Steep Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 25% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2.5 |
| Bank Slope | Low to moderate | Bank Width (m) | 3 to 4 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 3 |
| Water Depth (m) | 0.1 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool | Bedrock Outcrops | Yes |
| Bed Compaction | Low to moderate | Sediment Angularity | Angular |
| Sediment Matrix | Sand and gravel | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 017 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.03521<br>136.524655 |
| **Location ID** | ER-EROB-01 | | |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Overland flow path | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Moderate to low | Bank Width (m) | 4 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing overland flow path and no defined channel with in channel vegetation

Downstream showing overland flow path and no defined channel with in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 018 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.035329 |
| **Location ID** | ER-EROB-02 | | 136.523918 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Overland flow path | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 1.5 |
| Bank Slope | Moderate to low | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing overland flow path and no defined channel with in channel vegetation

Downstream showing overland flow path and no defined channel with in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 019 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.035487 |
| **Location ID** | ER-EROB-03 | | 136.523594 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Overland flow path | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 1.5 |
| Bank Slope | Moderate to low | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing overland flow path and no defined channel

Downstream showing overland flow path and no defined channel

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 020 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.042662 |
| **Location ID** | ER-EROB-04 | | 136.516949 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Seasonally inundated alluvial fan | | |
| **Relative Location** | Between Emerald River and Emerald River Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Flat | Local Influences | None |
| Floodplain Width (m) | >1 km | Landuse (left bank) | Native Forest |
| Floodplain Features | Alluvial fan | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | N/A | Bank Height (m) | N/A |
| Bank Slope | N/A | Bank Width (m) | N/A |
| Factors Affecting Bank Stability | N/A | Bank Material | N/A |
| Artificial Bank Protection | None | Substrate Composition | Sand and silt |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | N/A | Bedrock Outcrops | N/A |
| Bed Compaction | Moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Sand and silt | Bed Stability Rating | Bed stable |

**Photographs**

| | |
|---|---|
|  |  |
| Look east showing alluvial fan flowpaths | Look west showing alluvial fan flowpaths |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 024 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.036258 |
| **Location ID** | ER-EROB-05 | | 136.508961 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Overbank sheet flow area | | |
| **Relative Location** | Northern Bank, upstream of confluence with Emerald River - Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | N/A | Bank Height (m) | N/A |
| Bank Slope | N/A | Bank Width (m) | N/A |
| Factors Affecting Bank Stability | N/A | Bank Material | N/A |
| Artificial Bank Protection | None | Substrate Composition | Sand and silt |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | N/A | Bedrock Outcrops | N/A |
| Bed Compaction | Moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Sand and silt | Bed Stability Rating | Bed stable |

**Photographs**

| | |
|---|---|
|  |  |
| Looking north showing pooled water and representative vegetation | Looking south showing pooled water and representative vegetation |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 028 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-2 | **Coordinates** | -14.047773 |
| **Location ID** | ER-EROB-06 | | 136.498449 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Overbank Area – Minor Drain | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 1 | | |
| **Physical Assessment** | | | |
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |
| **Physical Barriers** | | | |
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |
| **Channel Shape & Banks** | | | |
| Bank Shape | Convex | Bank Height (m) | 0.5 |
| Bank Slope | Moderate | Bank Width (m) | 0.5 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |
| **Water Observations** | | | |
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |
| **Stream Bed** | | | |
| Extent of Bedform Features | Riffle | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 037 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.076077 |
| **Location ID** | ER-EROB-07 | | 136.459171 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Overland flow path | | |
| **Relative Location** | Downstream of confluence with Emerald River – Tributary 2 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 1 |
| Bank Slope | Moderate | Bank Width (m) | 1 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Glide | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud | Bed Stability Rating | Bed stable |

**Photographs**

Downstream showing overland flow path and no defined channel

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 115 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.082754 |
| **Location ID** | ER-EROB-08 | | 136.507429 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 Flowpath | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |
| **Physical Assessment** | | | |
| Valley Shape | Steep Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |
| **Physical Barriers** | | | |
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |
| **Channel Shape & Banks** | | | |
| Bank Shape | N/A | Bank Height (m) | N/A |
| Bank Slope | N/A | Bank Width (m) | N/A |
| Factors Affecting Bank Stability | N/A | Bank Material | N/A |
| Artificial Bank Protection | None | Substrate Composition | N/A |
| **Water Observations** | | | |
| Water Level | Low | Water Surface Width (m) | 6 to 8 |
| Water Depth (m) | 0.5 to 1 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |
| **Stream Bed** | | | |
| Extent of Bedform Features | Pool | Bedrock Outcrops | Not observed |
| Bed Compaction | Low | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Sand and silt | Bed Stability Rating | Bed Stable |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 114 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.082715 |
| **Location ID** | ER-EROB-09 | | 136.507266 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 Surface Depressions | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Steep Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | N/A | Bank Height (m) | N/A |
| Bank Slope | N/A | Bank Width (m) | N/A |
| Factors Affecting Bank Stability | N/A | Bank Material | N/A |
| Artificial Bank Protection | None | Substrate Composition | N/A |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 6 to 8 |
| Water Depth (m) | 0.5 to 1 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | Organic |
| Sediment Oils | None | Sediment Odours | Organic |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool | Bedrock Outcrops | Not observed |
| Bed Compaction | Low | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Sand and silt | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing surface depression with pooled water

Downstream showing surface depression with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 110 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.071769 |
| **Location ID** | ER-EROB-10 | | 136.496012 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Tributary 2 Overbank Area | | |
| **Relative Location** | Upstream of confluence with Emerald River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | None | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | N/A | Large Woody Debris | N/A |
| Extent of Bars (%) | N/A | Artificial Features | N/A |
| Particle Size on Bars | N/A | Channel Modifications | N/A |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | N/A | Bank Height (m) | N/A |
| Bank Slope | N/A | Bank Width (m) | N/A |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | N/A | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Mud and sand | Bed Stability Rating | Bed Stable |

**Photographs**

| | |
|---|---|
|  |  |
| Representative overbank vegetation and ground cover | Representative overbank vegetation and ground cover |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 071 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-3 | **Coordinates** | -14.07753 |
| **Location ID** | ER-EROB-11 | | 136.476753 |
| **Catchment** | Emerald River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Emerald River – Minor Drain | | |
| **Relative Location** | Upstream of confluence with Emerald River – Tributary 2 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 0.5 |
| Bank Slope | Moderate | Bank Width (m) | 0.5 |
| Factors Affecting Bank Stability | None | Bank Material | Sand and mud over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Sand and mud over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle | Bedrock Outcrops | No |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand and mud over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

| | |
|---|---|
|  |  |
| Upstream showing overland flow path and no defined channel | Downstream showing overland flow path and no defined channel with sandy bed |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 100 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.114795 |
| **Location ID** | AR-ARMC-01 | | 136.54187 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Main Channel | | |
| **Relative Location** | Main Channel at confluence with Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | Floating and fixed |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex, Stepped | Bank Height (m) | 6 |
| Bank Slope | Steep | Bank Width (m) | 4 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 40+ |
| Water Depth (m) | 1 to 2 | Turbidity (Visual) | Turbid, fines |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and cascade sequence, backwater in tributary | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Not present |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing Amagula River on the right with Tributary 1 entering from the left

Upstream Tributary 1at confluence with Amagula river

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 049 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.127003 |
| **Location ID** | AR-ARMC-02 | | 136.537476 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Main Channel (Leske Pools) | | |
| **Relative Location** | Downstream from Amagula River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped, convex | Bank Height (m) | 2.5 |
| Bank Slope | Steep | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 50+ |
| Water Depth (m) | 2 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool | Bedrock Outcrops | Uniformly rock controlled |
| Bed Compaction | Low | Sediment Angularity | Not present |
| Sediment Matrix | Bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing pooled water

Downstream showing pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 048 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.128348 |
| **Location ID** | AR-ARMC-03 | | 136.537264 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Main Channel (Leske Pools) | | |
| **Relative Location** | Downstream of confluence with Amagula River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped, convex | Bank Height (m) | 2.5 |
| Bank Slope | Steep ($60\text{-}80^0$) | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 50+ |
| Water Depth (m) | 2 m | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Run | Bedrock Outcrops | Uniformly rock controlled |
| Bed Compaction | Low | Sediment Angularity | Not present |
| Sediment Matrix | Bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream defined channel with rock controlled bed and in channel vegetation

Downstream defined channel with rock controlled bed and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 047 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.128749 |
| **Location ID** | AR-ARMC-04 | | 136.537755 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Main Channel (Leske Pools) | | |
| **Relative Location** | Downstream of confluence with Amagula River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave | Bank Height (m) | 1 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Bedrock |
| Artificial Bank Protection | None | Substrate Composition | Bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2 |
| Water Depth (m) | 0.1 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Rapid | Bedrock Outcrops | Uniformly rock controlled |
| Bed Compaction | Low | Sediment Angularity | Not present |
| Sediment Matrix | Bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with rock controlled bed and in channel vegetation

Downstream showing defined channel with rock controlled bed and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 046 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.128792 |
| **Location ID** | AR-ARMC-05 | | 136.537647 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Main Channel (Leske Pools) | | |
| **Relative Location** | Downstream of confluence with Amagula River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave | Bank Height (m) | 1 |
| Bank Slope | Low | Bank Width (m) | 5 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 3 |
| Water Depth (m) | 0.2 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pond | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Gravels on bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water in rock controlled bed

Downstream showing defined channel with rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 045 | **Monitoring Date** | 01/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.129531 |
| **Location ID** | AR-ARMC-06 | | 136.536358 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Main Channel (Leske pools) | | |
| **Relative Location** | Downstream of confluence with Amagula River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | Vegetated side/point bars | Large Woody Debris | <10% |
| Extent of Bars (%) | 70% | Artificial Features | None |
| Particle Size on Bars | Sand | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 2 |
| Bank Slope | Moderate | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 5 |
| Water Depth (m) | 1 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-angular |
| Sediment Matrix | Sand on bedrock | Bed Stability Rating | Moderate Deposition |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 103 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.090442 |
| **Location ID** | AR-ART1-01 | | 136.531822 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 1 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Undefined | Bank Height (m) | Undefined |
| Bank Slope | Undefined | Bank Width (m) | Undefined |
| Factors Affecting Bank Stability | None | Bank Material | Undefined |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Undefined | Bedrock Outcrops | Yes |
| Bed Compaction | Tight | Sediment Angularity | Not present |
| Sediment Matrix | Soil over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

| | |
|---|---|
|  |  |
| Upstream showing defined channel with in stream vegetation and rock controlled bed | Downstream showing undefined channel |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 101 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.096999 |
| **Location ID** | AR-ART1-02 | | 136.531618 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 1 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <20% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex, Stepped | Bank Height (m) | 1 |
| Bank Slope | Low | Bank Width (m) | 1 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Angular |
| Sediment Matrix | Bedrock, open framework | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with in stream vegetation and rock controlled bed

Downstream showing defined channel with rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 094 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.102045 |
| **Location ID** | AR-ART1-03 | | 136.533129 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 1 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow valley, asymmetrical | Local Influences | Road |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 50% |
| Extent of Bars (%) | None | Artificial Features | Road |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex, stepped | Bank Height (m) | 2 m |
| Bank Slope | Low to moderate | Bank Width (m) | 2 (east) / 20 (west) |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 2.5 |
| Water Depth (m) | 0.1 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water and in channel vegetation

Downstream showing defined channel and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 095 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.104553 |
| **Location ID** | AR-ART1-04 | | 136.533997 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 1 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow valley | Local Influences | Culvert |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 70% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 4 |
| Bank Slope | Steep | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | Culvert | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 0.5 |
| Water Depth (m) | 0.2 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with pooled water and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 096 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.104504 |
| **Location ID** | AR-ART1-05 | | 136.534251 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 1 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow valley | Local Influences | Culvert |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 50% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 1.5 |
| Bank Slope | Low | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | Culvert | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 0.5 |
| Water Depth (m) | 0.2 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Glide | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream defined channel with culvert

Upstream defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 097 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.106376 |
| **Location ID** | AR-ART1-06 | | 136.53641 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 1 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | Large floating and fixed debris |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex | Bank Height (m) | 4 |
| Bank Slope | Moderate | Bank Width (m) | 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 5-10 |
| Water Depth (m) | 1 | Turbidity (Visual) | Plant leachate |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and riffle sequence | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Sub-angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 090 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.087413 |
| **Location ID** | AR-ART2-01 | | 136.566443 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 2 (Main Channel) | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | 40% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 1.5 |
| Bank Slope | Low | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 3 to 5 |
| Water Depth (m) | 0.3 | Turbidity (Visual) | Clear |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water

Downstream showing defined channel with pooled water and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 078 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.098539 |
| **Location ID** | AR-ART2-02 | | 136.562446 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave | Bank Height (m) | 1.5 |
| Bank Slope | Moderate | Bank Width (m) | 1.5 |
| Factors Affecting Bank Stability | | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Bedrock, open | Bed Stability Rating | Bed stable |

**Photographs**

Downstream showing defined channel with residual water and rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 077 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.098865 |
| **Location ID** | AR-ART2-03 | | 136.562454 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | Point | Large Woody Debris | <5% |
| Extent of Bars (%) | 20 | Artificial Features | None |
| Particle Size on Bars | Sand | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave | Bank Height (m) | 0.5 |
| Bank Slope | Vertical | Bank Width (m) | 0.1 |
| Factors Affecting Bank Stability | Bed depression (2.5 m) | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 1.2 |
| Water Depth (m) | 0.5 | Turbidity (Visual) | Turbid |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Pool | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Sand and silt | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 076 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.099264 |
| **Location ID** | AR-ART2-04 | | 136.562268 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 1.5 |
| Bank Slope | Low | Bank Width (m) | 7 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with rock controlled bed and in channel vegetation

Downstream showing defined channel with rock controlled bed and in channel vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 079 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.100989 |
| **Location ID** | AR-ART2-05 | | 136.562831 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Convex, stepped with wide lower bench | Bank Height (m) | 1.5 |
| Bank Slope | Low | Bank Width (m) | 50 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with rock controlled bed

Downstream showing defined channel with rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 080 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.101839 |
| **Location ID** | AR-ART2-06 | | 136.56256 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 2 to 3 |
| Bank Slope | Low | Bank Width (m) | 40 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and pool | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Gravel and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with rock controlled bed.

Downstream showing defined channel with rock controlled bed and in stream vegetation

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 081 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.102451 |
| **Location ID** | AR-ART2-07 | | 136.562387 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 (typical bank elevation change) | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 2 to 3 |
| Bank Slope | Low | Bank Width (m) | 40 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and pool | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Gravel and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Western View - Tributary flows from right to left (north to south)

Eastern View – Tributary flows left to right (north to south)

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 082 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.103066 |
| **Location ID** | AR-ART2-08 | | 136.562335 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <5% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 3 |
| Bank Slope | Moderate | Bank Width (m) | 10 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | Low | Water Surface Width (m) | 6 |
| Water Depth (m) | 0.3 | Turbidity (Visual) | Clear |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and pool | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Gravel and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with controlled bed

Downstream showing defined channel with pooled water and rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 088 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.104423 |
| **Location ID** | AR-ART2-09 | | 136.562156 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 (High flow Channel) | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 3 |
| Bank Slope | Moderate | Bank Width (m) | 4 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Glide and pool | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Gravel and bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with rock controlled bed

Downstream showing defined channel with rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 087 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.104894 |
| **Location ID** | AR-ART2-10 | | 136.561999 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 (High Flow Channel) | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Stepped | Bank Height (m) | 1 |
| Bank Slope | Low | Bank Width (m) | 1 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Gravel and bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with rock controlled bed and in channel vegetation

Downstream showing defined channel with rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 083 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.10525 |
| **Location ID** | AR-ART2-11 | | 136.561449 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | <10% |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Concave, stepped | Bank Height (m) | 2 |
| Bank Slope | Moderate | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | None | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and glide | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed stable |

**Photographs**

Upstream showing defined channel with rock controlled bed

Downstream showing defined channel with rock controlled bed

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 084 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.105445 |
| **Location ID** | AR-ART2-12 | | 136.561547 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula – Tributary 2 Anabranch | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow, asymmetrical | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | Point, unvegetated | Large Woody Debris | None |
| Extent of Bars (%) | 40 | Artificial Features | None |
| Particle Size on Bars | Sand, minor silt | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Undercut, concave | Bank Height (m) | 3 |
| Bank Slope | Moderate | Bank Width (m) | 2 |
| Factors Affecting Bank Stability | Bedrock depression | Bank Material | Fines over bedrock |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle and pool | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Sub-Angular |
| Sediment Matrix | Sand and bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

Upstream showing defined channel with pooled water and sediment

Downstream showing defined channel

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 092 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.10165 |
| **Location ID** | AR-AROB-01 | | 136.546004 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Undefined Flow Path | | |
| **Relative Location** | Upstream of confluence with Amagula River – Tributary 1 | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Undefined | Bank Height (m) | Undefined |
| Bank Slope | Undefined | Bank Width (m) | Undefined |
| Factors Affecting Bank Stability | None | Bank Material | Undefined |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Undefined | Bedrock Outcrops | Yes |
| Bed Compaction | Tight | Sediment Angularity | Angular |
| Sediment Matrix | Soil over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

| | |
|---|---|
|  |  |
| Upstream showing overland flow path and no defined channel | Downstream showing overland flow path and no defined channel |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 098 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.111648 |
| **Location ID** | AR-AROB-02 | | 136.539089 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Minor Overbank Drain | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Shallow Valley | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Undefined | Bank Height (m) | Undefined |
| Bank Slope | Undefined | Bank Width (m) | Undefined |
| Factors Affecting Bank Stability | None | Bank Material | Undefined |
| Artificial Bank Protection | None | Substrate Composition | Fines/sand over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Undefined | Bedrock Outcrops | Yes |
| Bed Compaction | Low | Sediment Angularity | Angular |
| Sediment Matrix | Fines/sand over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

| | |
|---|---|
|  |  |
| Upstream showing undefined channel with sandy bed | Downstream showing undefined channel with sandy bed and in stream vegetation. |

## Physical Assessment of Stream Geomorphology – Field Datasheet

| | | | |
|---|---|---|---|
| **FIGURE ID** | 099 | **Monitoring Date** | 02/07/2014 |
| **Figure Reference** | Figure A-4 | **Coordinates** | -14.113318 |
| **Location ID** | AR-AROB-03 | | 136.540434 |
| **Catchment** | Amagula River | **Coordinate System** | Decimal degrees |
| **Drainage Feature** | Amagula River – Tributary 1 Overbank Area | | |
| **Relative Location** | Upstream of confluence with Amagula River | | |

| **Physical Assessment** | | | |
|---|---|---|---|
| Valley Shape | Broad | Local Influences | None |
| Floodplain Width (m) | N/A | Landuse (left bank) | Native Forest |
| Floodplain Features | No features | Landuse (right bank) | Native Forest |

| **Physical Barriers** | | | |
|---|---|---|---|
| Type of Bars | None | Large Woody Debris | None |
| Extent of Bars (%) | None | Artificial Features | None |
| Particle Size on Bars | N/A | Channel Modifications | None |

| **Channel Shape & Banks** | | | |
|---|---|---|---|
| Bank Shape | Undefined | Bank Height (m) | Undefined |
| Bank Slope | Undefined | Bank Width (m) | Undefined |
| Factors Affecting Bank Stability | None | Bank Material | Undefined |
| Artificial Bank Protection | None | Substrate Composition | Fines over bedrock |

| **Water Observations** | | | |
|---|---|---|---|
| Water Level | No Flow | Water Surface Width (m) | 0 |
| Water Depth (m) | 0 | Turbidity (Visual) | None |
| Water Oils | None | Water Odours | None |
| Sediment Oils | None | Sediment Odours | None |

| **Stream Bed** | | | |
|---|---|---|---|
| Extent of Bedform Features | Riffle | Bedrock Outcrops | Yes |
| Bed Compaction | Moderate | Sediment Angularity | Angular |
| Sediment Matrix | Fines over bedrock | Bed Stability Rating | Bed Stable |

**Photographs**

| | |
|---|---|
|  |  |
| Upstream showing undefined channel with in stream vegetation | Downstream showing undefined channel with in stream vegetation. |

# APPENDIX B

## *Surface Water Quality Monitoring Data*

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP 1 | EMP 2 | EMP 3 | ARMP 3 | ARMP 4 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-JAN-2014 15:00 | 24-JAN-2014 15:00 | 25-JAN-2014 15:00 | 25-JAN-2014 15:00 | 25-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1401809-001** | **EB1401809-002** | **EB1401809-003** | **EB1401809-004** | **EB1401809-005** |
| **EA025: Suspended Solids** | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **305** | <1 | <1 |
| **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 | **5** | **4** | **10** | **4** | **2** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** | **4** | **10** | **4** | **2** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | <1 | **129** | **1** | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **10** | **10** | **911** | **12** | **9** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **20** | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **62** | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **7** | **550** | **8** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **22** | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.04** | **0.04** | **0.03** | **0.05** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.16** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.007** | **0.008** | **0.007** | **0.003** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | **0.004** | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.072** | **0.080** | **0.104** | **0.063** | **0.012** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | **0.018** | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP 1 | EMP 2 | EMP 3 | ARMP 3 | ARMP 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 24-JAN-2014 15:00 | 24-JAN-2014 15:00 | 25-JAN-2014 15:00 | 25-JAN-2014 15:00 | 25-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1401809-001** | **EB1401809-002** | **EB1401809-003** | **EB1401809-004** | **EB1401809-005** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.15** | **0.16** | **0.18** | **0.06** | **0.10** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.15** | **0.13** | **0.18** | **0.06** | **0.07** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | **0.17** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.007** | **0.007** | **0.008** | **0.006** | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | **0.001** | **0.001** | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.078** | **0.099** | **0.105** | **0.062** | **0.012** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.35** | **0.36** | **0.52** | **0.07** | **0.33** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **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 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | **0.2** | **0.2** | **0.1** | **0.1** | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | **0.2** | **0.2** | **0.1** | **0.1** | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP 1 | EMP 2 | EMP 3 | ARMP 3 | ARMP 4 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-JAN-2014 15:00 | 24-JAN-2014 15:00 | 25-JAN-2014 15:00 | 25-JAN-2014 15:00 | 25-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1401809-001** | **EB1401809-002** | **EB1401809-003** | **EB1401809-004** | **EB1401809-005** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.38** | **0.36** | **28.6** | **0.44** | **0.29** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.30** | **0.30** | **30.6** | **0.35** | **0.26** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- | **3.37** | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP 4 b | ARMP 2 | ARMP 1 | EMP 7 | EMP 6 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 25-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1401809-006** | **EB1401809-007** | **EB1401809-008** | **EB1401809-009** | **EB1401809-010** |
| **EA025: Suspended Solids** | | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **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 | | **4** | **5** | <1 | **4** | **7** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **4** | **5** | <1 | **4** | **7** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | <1 | **2** | **3** | **2** | **2** |
| **ED045G: Chloride Discrete analyser** | | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **9** | **11** | **11** | **11** | **12** |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **6** | **6** | **6** | **7** | **8** |
| **Potassium** | 7440-09-7 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | **0.08** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.002** | **0.002** | **0.002** | **0.008** | **0.009** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.011** | **0.008** | **0.003** | **0.533** | **0.377** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **ARMP 4 b** | **ARMP 2** | **ARMP 1** | **EMP 7** | **EMP 6** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 25-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1401809-006** | **EB1401809-007** | **EB1401809-008** | **EB1401809-009** | **EB1401809-010** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.15** | **0.09** | **0.11** | **0.35** | **0.15** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.08** | **0.04** | **0.09** | **0.03** | **0.10** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.002** | **0.002** | **0.002** | **0.008** | **0.009** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | **0.003** | **0.002** | <0.001 | **0.001** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.012** | **0.016** | **0.005** | **0.559** | **0.392** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | **0.009** | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.40** | **0.37** | **0.34** | **0.93** | **0.37** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | **0.04** | <0.01 | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | **0.1** | **0.1** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | **0.1** | **0.1** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP 4 b | ARMP 2 | ARMP 1 | EMP 7 | EMP 6 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 25-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 | 26-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1401809-006** | **EB1401809-007** | **EB1401809-008** | **EB1401809-009** | **EB1401809-010** |
| **EN055: Ionic Balance - Continued** | | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | | **0.33** | **0.45** | **0.37** | **0.43** | **0.52** |
| **Total Cations** | ---- | 0.01 | meq/L | | **0.26** | **0.26** | **0.26** | **0.30** | **0.35** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | *Client sample ID* | **EMP 4** | **EMP 5** |
|---|---|---|---|---|---|
| | | | *Client sampling date / time* | 26-JAN-2014 15:00 | 27-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1401809-011** | **EB1401809-012** |
| **EA025: Suspended Solids** | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | <1 | **4** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | <1 | **4** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **16** | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **9** | **8** |
| **ED093F: Dissolved Major Cations** | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **9** | **4** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.06** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.008** | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.322** | <0.001 |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP 4** | **EMP 5** |
|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 26-JAN-2014 15:00 | 27-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1401809-011** | **EB1401809-012** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.18** | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.09** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.009** | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | **0.0001** | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.001** | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.324** | <0.001 |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | **0.002** | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.42** | <0.05 |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | **0.1** | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | **0.1** | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 4** | **EMP 5** |
|---|---|---|---|---|---|
| | | | Client sampling date / time | 26-JAN-2014 15:00 | 27-JAN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1401809-011** | **EB1401809-012** |
| **EN055: Ionic Balance - Continued** | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.59** | **0.31** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.39** | **0.17** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 1** | **EMP 2** | **EMP 3** | **EMP 4** | **EMP 5** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-FEB-2014 15:00 | 24-FEB-2014 15:00 | 24-FEB-2014 15:00 | 22-FEB-2014 15:00 | 21-FEB-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1404467-001** | **EB1404467-002** | **EB1404467-003** | **EB1404467-004** | **EB1404467-005** |
| **EA025: Suspended Solids** | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | **24** | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **284** | <1 | <1 |
| **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 | **5** | **5** | **16** | **8** | **4** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** | **5** | **16** | **8** | **4** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | <1 | **124** | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **9** | **9** | **934** | **8** | **8** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **18** | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **58** | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **6** | **562** | **6** | **4** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **20** | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.05** | **0.02** | **0.01** | **0.04** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.21** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.005** | **0.005** | **0.006** | **0.006** | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.054** | **0.047** | **0.071** | **0.200** | <0.001 |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Client sample ID | EMP 1 | EMP 2 | EMP 3 | EMP 4 | EMP 5 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-FEB-2014 15:00 | 24-FEB-2014 15:00 | 24-FEB-2014 15:00 | 22-FEB-2014 15:00 | 21-FEB-2014 15:00 |
| Compound | CAS Number | LOR | Unit | EB1404467-001 | EB1404467-002 | EB1404467-003 | EB1404467-004 | EB1404467-005 |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| Uranium | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Iron | 7439-89-6 | 0.05 | mg/L | **0.24** | **0.16** | **0.14** | **0.11** | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | **0.06** | **0.08** | **0.12** | **0.10** | **0.02** |
| Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | **0.002** | <0.001 | <0.001 | <0.001 |
| Boron | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.21** | <0.05 | <0.05 |
| Barium | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.006** | **0.006** | **0.007** | **0.002** |
| Beryllium | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | **0.0001** | **0.0002** | **0.0001** | <0.0001 |
| Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Copper | 7440-50-8 | 0.001 | mg/L | **0.003** | **0.001** | <0.001 | <0.001 | <0.001 |
| Manganese | 7439-96-5 | 0.001 | mg/L | **0.056** | **0.059** | **0.080** | **0.214** | <0.001 |
| Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Selenium | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Vanadium | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Zinc | 7440-66-6 | 0.005 | mg/L | **0.007** | <0.005 | <0.005 | <0.005 | <0.005 |
| Uranium | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Iron | 7439-89-6 | 0.05 | mg/L | **0.65** | **0.61** | **0.68** | **0.38** | <0.05 |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | **0.13** | <0.01 | **0.02** | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | **0.1** | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 1** | **EMP 2** | **EMP 3** | **EMP 4** | **EMP 5** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-FEB-2014 15:00 | 24-FEB-2014 15:00 | 24-FEB-2014 15:00 | 22-FEB-2014 15:00 | 21-FEB-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1404467-001** | **EB1404467-002** | **EB1404467-003** | **EB1404467-004** | **EB1404467-005** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.35** | **0.35** | **29.2** | **0.39** | **0.31** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.26** | **0.26** | **30.6** | **0.26** | **0.17** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- | **2.29** | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP 6 | EMP 7 | ARMP 1 | ARMP 2 | ARMP 3 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 22-FEB-2014 15:00 | 24-FEB-2014 15:00 | 23-FEB-2014 15:00 | 23-FEB-2014 15:00 | 24-FEB-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1404467-006** | **EB1404467-007** | **EB1404467-008** | **EB1404467-009** | **EB1404467-010** |
| **EA025: Suspended Solids** | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | <1 | <1 | <1 |
| **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 | **5** | **4** | **5** | **5** | **5** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** | **4** | **5** | **5** | **5** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **4** | <1 | <1 | <1 | **1** |
| **ED045G: Chloride Discrete analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **9** | **8** | **10** | **10** | **11** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **5** | **5** | **5** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.03** | <0.01 | <0.01 | <0.01 | **0.07** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.004** | **0.002** | **0.002** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.173** | **0.094** | **0.002** | **0.006** | **0.088** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP 6 | EMP 7 | ARMP 1 | ARMP 2 | ARMP 3 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 22-FEB-2014 15:00 | 24-FEB-2014 15:00 | 23-FEB-2014 15:00 | 23-FEB-2014 15:00 | 24-FEB-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1404467-006** | **EB1404467-007** | **EB1404467-008** | **EB1404467-009** | **EB1404467-010** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.10** | **0.10** | **0.10** | **0.10** | **0.11** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.13** | **0.08** | **0.10** | **0.08** | **0.11** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.007** | **0.006** | **0.002** | **0.002** | **0.005** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.200** | **0.111** | **0.003** | **0.007** | **0.095** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | **0.008** | <0.005 | <0.005 | <0.005 | **0.007** |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.44** | **0.34** | **0.31** | **0.33** | **0.20** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | **0.11** | **0.02** | <0.01 | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | **0.1** | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 6** | **EMP 7** | **ARMP 1** | **ARMP 2** | **ARMP 3** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 22-FEB-2014 15:00 | 24-FEB-2014 15:00 | 23-FEB-2014 15:00 | 23-FEB-2014 15:00 | 24-FEB-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1404467-006** | **EB1404467-007** | **EB1404467-008** | **EB1404467-009** | **EB1404467-010** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.44** | **0.31** | **0.38** | **0.38** | **0.43** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.30** | **0.22** | **0.22** | **0.22** | **0.30** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| | | | Client sample ID | **ARMP 4** |
|---|---|---|---|---|
| | | | Client sampling date / time | 24-FEB-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1404467-011** |
| **EA025: Suspended Solids** | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 |
| **EA065: Total Hardness as CaCO3** | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <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 | **5** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 |
| **ED045G: Chloride Discrete analyser** | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **10** |
| **ED093F: Dissolved Major Cations** | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **5** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.011** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: ARMP 4 |
|---|---|---|---|---|
| | | | Client sampling date / time | 24-FEB-2014 15:00 |
| | | | | EB1404467-011 |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.09** |
| **EG020T: Total Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.08** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.012** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | **0.006** |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.32** |
| **EG035F: Dissolved Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.08** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <0.01 |
| **EN055: Ionic Balance** | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP 4** |
|---|---|---|---|---|
| | | | Client sampling date / time | 24-FEB-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1404467-011** |
| **EN055: Ionic Balance - Continued** | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.38** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.22** |
| **Ionic Balance** | ---- | 0.01 | % | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP 1 | EMP 2 | EMP 3 | EMP 4 | EMP 6 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 22-MAR-2014 15:00 | 21-MAR-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1407096-001** | **EB1407096-002** | **EB1407096-003** | **EB1407096-004** | **EB1407096-005** |
| **EA025: Suspended Solids** | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **375** | <1 | <1 |
| **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 | **6** | **6** | **11** | **8** | **11** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **6** | **6** | **11** | **8** | **11** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | **1** | **152** | **1** | **1** |
| **ED045G: Chloride Discrete analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **8** | **8** | **1060** | **8** | **8** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **25** | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **76** | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **6** | **628** | **7** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **29** | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | **0.02** | <0.01 | <0.01 | **0.04** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.006** | **0.007** | **0.006** | **0.004** |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | **0.001** | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.050** | **0.056** | **0.068** | **0.068** | **0.058** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 1** | **EMP 2** | **EMP 3** | **EMP 4** | **EMP 6** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 22-MAR-2014 15:00 | 21-MAR-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1407096-001** | **EB1407096-002** | **EB1407096-003** | **EB1407096-004** | **EB1407096-005** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.30** | <0.05 | <0.05 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.10** | **0.14** | **0.08** | **0.07** | **0.08** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.05** | **0.06** | **0.06** | **0.04** | **0.07** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.007** | **0.007** | **0.006** | **0.005** |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.056** | **0.084** | **0.071** | **0.081** | **0.062** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.27** | <0.05 | <0.05 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.40** | **0.45** | **0.48** | **0.28** | **0.17** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.05** | **0.03** | **0.07** | **0.04** | **0.06** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.2** | **0.2** | **0.2** | **0.2** | **0.2** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.2** | **0.2** | **0.3** | **0.2** | **0.3** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.02** | **0.03** | **0.02** | **0.02** | **0.02** |
| **EN055: Ionic Balance** | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 1** | **EMP 2** | **EMP 3** | **EMP 4** | **EMP 6** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 22-MAR-2014 15:00 | 21-MAR-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1407096-001** | **EB1407096-002** | **EB1407096-003** | **EB1407096-004** | **EB1407096-005** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.37** | **0.37** | **33.3** | **0.41** | **0.47** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.26** | **0.26** | **35.6** | **0.30** | **0.30** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- | **3.29** | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 0.1 | % | **100** | **97.4** | **97.0** | **97.7** | **101** |
| **Toluene-D8** | 2037-26-5 | 0.1 | % | **98.2** | **103** | **100** | **103** | **95.3** |
| **4-Bromofluorobenzene** | 460-00-4 | 0.1 | % | **99.7** | **105** | **104** | **94.0** | **97.0** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP 7 | ARMP 1 | ARMP 2 | ARMP 3 | ARMP 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 22-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1407096-006** | **EB1407096-007** | **EB1407096-008** | **EB1407096-009** | **EB1407096-010** |
| **EA025: Suspended Solids** | | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **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 | | **3** | **5** | **5** | **4** | **6** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **3** | **5** | **5** | **4** | **6** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | **1** | **2** | **2** | **2** | **2** |
| **ED045G: Chloride Discrete analyser** | | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **7** | **9** | **9** | **9** | **8** |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **6** | **6** | **6** | **7** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | <0.01 | **0.01** | <0.01 | **0.04** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.004** | **0.003** | **0.002** | **0.003** | **0.003** |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.084** | **0.003** | **0.007** | **0.054** | **0.012** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP 7 | ARMP 1 | ARMP 2 | ARMP 3 | ARMP 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 22-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1407096-006** | **EB1407096-007** | **EB1407096-008** | **EB1407096-009** | **EB1407096-010** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.11** | **0.10** | **0.09** | **0.14** | **0.07** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.05** | **0.05** | **0.04** | **0.06** | **0.04** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.004** | **0.002** | **0.002** | **0.004** | **0.003** |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.094** | **0.002** | **0.006** | **0.059** | **0.012** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.35** | **0.25** | **0.28** | **0.17** | **0.28** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **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 | **0.06** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | **0.2** | **0.1** | **0.2** | **0.2** | **0.1** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | **0.2** | **0.1** | **0.2** | **0.2** | **0.2** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | **0.02** | **0.02** | **0.02** | **0.03** | **0.02** |
| **EN055: Ionic Balance** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 7** | **ARMP 1** | **ARMP 2** | **ARMP 3** | **ARMP 4** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 22-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 | 23-MAR-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1407096-006** | **EB1407096-007** | **EB1407096-008** | **EB1407096-009** | **EB1407096-010** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.28** | **0.40** | **0.40** | **0.38** | **0.39** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.26** | **0.26** | **0.26** | **0.30** | **0.26** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 0.1 | % | **103** | **102** | **104** | **105** | **101** |
| **Toluene-D8** | 2037-26-5 | 0.1 | % | **100** | **101** | **101** | **101** | **102** |
| **4-Bromofluorobenzene** | 460-00-4 | 0.1 | % | **93.2** | **96.4** | **100** | **96.7** | **101** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP 2 | EMP 3 | EMP 4 | EMP 6 | EMP 7 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 05-MAY-2014 15:00 | 05-MAY-2014 15:00 | 04-MAY-2014 15:00 | 04-MAY-2014 15:00 | 04-MAY-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1410718-011** | **EB1410718-012** | **EB1410718-013** | **EB1410718-014** | **EB1410718-015** |
| **EA025: Suspended Solids** | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | **250** | <1 | <1 | <1 |
| **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 | **5** | **11** | **6** | **6** | **7** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** | **11** | **6** | **6** | **7** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | **106** | <1 | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **9** | **800** | **9** | **9** | **8** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | **16** | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | **51** | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **5** | **478** | **6** | **6** | **5** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | **15** | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.03** | **0.02** | **0.02** | **0.04** | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | **0.18** | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.004** | **0.004** | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.060** | **0.051** | **0.065** | **0.093** | **0.048** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP 2 | EMP 3 | EMP 4 | EMP 6 | EMP 7 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 05-MAY-2014 15:00 | 05-MAY-2014 15:00 | 04-MAY-2014 15:00 | 04-MAY-2014 15:00 | 04-MAY-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1410718-011** | **EB1410718-012** | **EB1410718-013** | **EB1410718-014** | **EB1410718-015** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.12** | **0.11** | **0.07** | **0.08** | **0.08** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.08** | **0.14** | **0.05** | **0.06** | **0.06** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | **0.16** | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.005** | **0.005** | **0.005** | **0.005** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | **0.002** | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | **0.002** | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.045** | **0.050** | **0.066** | **0.099** | **0.048** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | **0.006** | **0.009** | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.32** | **0.35** | **0.24** | **0.19** | **0.24** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | **0.01** | **0.02** | <0.01 | **0.03** | **0.01** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP 2 | EMP 3 | EMP 4 | EMP 6 | EMP 7 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 05-MAY-2014 15:00 | 05-MAY-2014 15:00 | 04-MAY-2014 15:00 | 04-MAY-2014 15:00 | 04-MAY-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1410718-011** | **EB1410718-012** | **EB1410718-013** | **EB1410718-014** | **EB1410718-015** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.35** | **25.0** | **0.37** | **0.37** | **0.37** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.22** | **26.2** | **0.26** | **0.26** | **0.22** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | **2.28** | ---- | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP 1** | **ARMP 2** | **ARMP 3** | **ARMP 4** |
|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 02-MAY-2014 15:00 | 02-MAY-2014 15:00 | 05-MAY-2014 15:00 | 05-MAY-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1410718-016** | **EB1410718-017** | **EB1410718-018** | **EB1410718-019** |
| **EA025: Suspended Solids** | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | **4** | <1 | **3** | **4** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **4** | <1 | **3** | **4** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | **2** | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **9** | **9** | **10** | **9** |
| **ED093F: Dissolved Major Cations** | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **4** | **4** | **6** | **5** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.05** | **0.02** | **0.02** | **0.01** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.002** | **0.002** | **0.003** | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.001** | **0.004** | **0.038** | **0.007** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **ARMP 1** | **ARMP 2** | **ARMP 3** | **ARMP 4** |
|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 02-MAY-2014 15:00 | 02-MAY-2014 15:00 | 05-MAY-2014 15:00 | 05-MAY-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1410718-016** | **EB1410718-017** | **EB1410718-018** | **EB1410718-019** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.10** | **0.08** | <0.05 | **0.06** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.10** | **0.09** | **0.03** | **0.07** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.002** | **0.002** | **0.003** | **0.002** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.002** | **0.004** | **0.036** | **0.007** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | **0.005** | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.19** | **0.25** | **0.13** | **0.23** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | **0.02** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **ARMP 1** | **ARMP 2** | **ARMP 3** | **ARMP 4** |
|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 02-MAY-2014 15:00 | 02-MAY-2014 15:00 | 05-MAY-2014 15:00 | 05-MAY-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1410718-016** | **EB1410718-017** | **EB1410718-018** | **EB1410718-019** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | | **0.35** | **0.30** | **0.34** | **0.33** |
| **Total Cations** | ---- | 0.01 | meq/L | | **0.17** | **0.17** | **0.26** | **0.22** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: EMP 1 | EMP 2 | EMP 3 |
|---|---|---|---|---|---|---|
| | | | | Client sampling date / time: 02-JUN-2014 15:00 | 02-JUN-2014 15:00 | 02-JUN-2014 15:00 |
| | | | | EB1413411-013 | EB1413411-014 | EB1413411-015 |
| **EA025: Suspended Solids** | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **366** |
| **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 | **5** | **5** | **11** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** | **5** | **11** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | **1** | **150** |
| **ED045G: Chloride Discrete analyser** | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **10** | **10** | **1130** |
| **ED093F: Dissolved Major Cations** | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **23** |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **75** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **6** | **660** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **26** |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.26** |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.007** | **0.008** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | **0.001** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.036** | **0.044** | **0.055** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: EMP 1 | EMP 2 | EMP 3 |
|---|---|---|---|---|---|---|
| | | | | Client sampling date / time: 02-JUN-2014 15:00 | 02-JUN-2014 15:00 | 02-JUN-2014 15:00 |
| | | | | EB1413411-013 | EB1413411-014 | EB1413411-015 |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.06** | **0.07** | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.02** | **0.03** | **0.05** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.26** |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.007** | **0.008** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.050** | **0.049** | **0.061** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.18** | **0.19** | **0.21** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.04** | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | EMP 1 | EMP 2 | EMP 3 |
|---|---|---|---|---|---|---|
| *Client sample ID* | | | | | | |
| *Client sampling date / time* | | | | 02-JUN-2014 15:00 | 02-JUN-2014 15:00 | 02-JUN-2014 15:00 |
| | | | | **EB1413411-013** | **EB1413411-014** | **EB1413411-015** |
| **EN055: Ionic Balance - Continued** | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.40** | **0.40** | **35.2** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.26** | **0.26** | **36.7** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- | **2.04** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP 4 | EMP 6 | EMP 7 | ARMP 1 | ARMP 2 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 31-MAY-2014 15:00 | 31-MAY-2014 15:00 | 02-JUN-2014 15:00 | 01-JUN-2014 15:00 | 01-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1413411-016** | **EB1413411-017** | **EB1413411-018** | **EB1413411-019** | **EB1413411-020** |
| **EA025: Suspended Solids** | | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **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 | | **6** | **4** | **5** | **2** | **4** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **6** | **4** | **5** | **2** | **4** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | <1 | <1 | **2** | **1** | **1** |
| **ED045G: Chloride Discrete analyser** | | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **9** | **10** | **9** | **11** | **11** |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **7** | **7** | **6** | **6** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | | <1 | <1 | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | <0.01 | **0.01** | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.003** | **0.003** | **0.006** | **0.003** | **0.003** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.012** | **0.023** | **0.105** | **0.002** | **0.008** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 | **0.011** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP 4 | EMP 6 | EMP 7 | ARMP 1 | ARMP 2 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 31-MAY-2014 15:00 | 31-MAY-2014 15:00 | 02-JUN-2014 15:00 | 01-JUN-2014 15:00 | 01-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1413411-016** | **EB1413411-017** | **EB1413411-018** | **EB1413411-019** | **EB1413411-020** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | <0.05 | <0.05 | **0.10** | **0.10** | **0.09** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | <0.01 | **0.02** | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.004** | **0.004** | **0.006** | **0.003** | **0.003** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.021** | **0.024** | **0.109** | **0.002** | **0.008** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | **0.007** | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.13** | **0.08** | **0.38** | **0.19** | **0.28** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | **0.01** | **0.04** | <0.01 | <0.01 | **0.01** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | **0.01** | **0.01** | **0.05** |
| **EN055: Ionic Balance** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 4** | **EMP 6** | **EMP 7** | **ARMP 1** | **ARMP 2** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 31-MAY-2014 15:00 | 31-MAY-2014 15:00 | 02-JUN-2014 15:00 | 01-JUN-2014 15:00 | 01-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1413411-016** | **EB1413411-017** | **EB1413411-018** | **EB1413411-019** | **EB1413411-020** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.37** | **0.36** | **0.40** | **0.37** | **0.41** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.30** | **0.30** | **0.26** | **0.26** | **0.26** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP 3** | **ARMP 4** |
|---|---|---|---|---|---|
| | | | Client sampling date / time | 02-JUN-2014 15:00 | 02-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1413411-021** | **EB1413411-022** |
| **EA025: Suspended Solids** | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | **4** | **5** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **4** | **5** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | **1** |
| **ED045G: Chloride Discrete analyser** | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **10** | **11** |
| **ED093F: Dissolved Major Cations** | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.003** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.044** | **0.012** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP 3** | **ARMP 4** |
|---|---|---|---|---|---|
| | | | Client sampling date / time | 02-JUN-2014 15:00 | 02-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1413411-021** | **EB1413411-022** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.003** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.046** | **0.014** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | **0.010** |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.09** | **0.21** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | **0.1** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | **0.1** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.08** | <0.01 |
| **EN055: Ionic Balance** | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP 3** | **ARMP 4** |
|---|---|---|---|---|---|
| | | | Client sampling date / time | 02-JUN-2014 15:00 | 02-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1413411-021** | **EB1413411-022** |
| **EN055: Ionic Balance - Continued** | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.38** | **0.43** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.30** | **0.26** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | <100 | <100 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | ARMP 2 | ARMP 1 |
|---|---|---|---|---|---|
| *Client sample ID* | | | | | |
| *Client sampling date / time* | | | | 27-JUN-2014 15:00 | 27-JUN-2014 15:00 |
| | | | | **EB1415886-007** | **EB1415886-008** |
| **EA025: Suspended Solids** | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | **5** | **4** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** | **4** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **12** | **12** |
| **ED093F: Dissolved Major Cations** | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.01** | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.003** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.006** | **0.002** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: ARMP 2 | ARMP 1 |
|---|---|---|---|---|---|
| | | | | Client sampling date / time: 27-JUN-2014 15:00 | 27-JUN-2014 15:00 |
| | | | | EB1415886-007 | EB1415886-008 |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.10** | **0.09** |
| **EG020T: Total Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.02** | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.005** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.008** | **0.002** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.27** | **0.19** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | ARMP 2 | ARMP 1 |
|---|---|---|---|---|---|
| *Client sample ID* | | | | **EB1415886-007** | **EB1415886-008** |
| *Client sampling date / time* | | | | 27-JUN-2014 15:00 | 27-JUN-2014 15:00 |
| **EN055: Ionic Balance - Continued** | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.44** | **0.42** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.30** | **0.30** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: ARMP 4 | ARMP 3 |
|---|---|---|---|---|---|
| | | | | Client sampling date / time: 29-JUN-2014 15:00 | 29-JUN-2014 15:00 |
| | | | | EB1415886-014 | EB1415886-015 |
| **EA025: Suspended Solids** | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | **5** | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | **1** | **1** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **1** | **1** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **12** | **10** |
| **ED093F: Dissolved Major Cations** | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | **0.01** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | **0.003** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.010** | **0.028** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | ARMP 4 | ARMP 3 |
|---|---|---|---|---|---|
| *Client sample ID* | | | | | |
| *Client sampling date / time* | | | | 29-JUN-2014 15:00 | 29-JUN-2014 15:00 |
| | | | | **EB1415886-014** | **EB1415886-015** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | **0.03** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.012** | **0.032** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.20** | <0.05 |
| **EG035F: Dissolved Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.02** | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: ARMP 4 | Client sample ID: ARMP 3 |
|---|---|---|---|---|---|
| | | | | Client sampling date / time: 29-JUN-2014 15:00 | 29-JUN-2014 15:00 |
| | | | | EB1415886-014 | EB1415886-015 |
| **EN055: Ionic Balance - Continued** | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.36** | **0.30** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.26** | **0.26** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 1** | **EMP 2** | **EMP 3** |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 29-JUN-2014 15:00 | 29-JUN-2014 15:00 | 29-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1415886-016** | **EB1415886-017** | **EB1415886-018** |
| **EA025: Suspended Solids** | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **186** |
| **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 | <1 | **1** | **6** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | <1 | **1** | **6** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | <1 | **79** |
| **ED045G: Chloride Discrete analyser** | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **10** | **10** | **666** |
| **ED093F: Dissolved Major Cations** | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **12** |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **38** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **5** | **6** | **409** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **13** |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.03** | **0.03** | **0.01** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.15** |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.008** | **0.008** | **0.007** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.042** | **0.059** | **0.061** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP 1** | **EMP 2** | **EMP 3** |
|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-JUN-2014 15:00 | 29-JUN-2014 15:00 | 29-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1415886-016** | **EB1415886-017** | **EB1415886-018** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | <0.05 | <0.05 | **0.07** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.06** | **0.04** | **0.04** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | **0.14** |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.008** | **0.008** | **0.007** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | **0.001** | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.171** | **0.076** | **0.064** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.38** | **0.14** | **0.15** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 1** | **EMP 2** | **EMP 3** |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 29-JUN-2014 15:00 | 29-JUN-2014 15:00 | 29-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1415886-016** | **EB1415886-017** | **EB1415886-018** |
| **EN055: Ionic Balance - Continued** | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.30** | **0.30** | **20.6** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.22** | **0.26** | **21.8** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- | **3.04** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP4** | **EMP6** | **EMP7** |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 25-JUN-2014 15:00 | 25-JUN-2014 15:00 | 25-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1415546-006** | **EB1415546-007** | **EB1415546-008** |
| **EA025: Suspended Solids** | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | <1 |
| **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 | **4** | **5** | **4** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **4** | **5** | **4** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **12** | **10** |
| **ED093F: Dissolved Major Cations** | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **8** | **8** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.01** | **0.02** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.003** | **0.008** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.007** | **0.018** | **0.259** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP4 | EMP6 | EMP7 |
|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 25-JUN-2014 15:00 | 25-JUN-2014 15:00 | 25-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1415546-006** | **EB1415546-007** | **EB1415546-008** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.05** | <0.05 | **0.61** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.02** | **0.02** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.004** | **0.003** | **0.008** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.030** | **0.026** | **0.266** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | **0.008** | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.12** | **0.09** | **0.22** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP4** | **EMP6** | **EMP7** |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 25-JUN-2014 15:00 | 25-JUN-2014 15:00 | 25-JUN-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1415546-006** | **EB1415546-007** | **EB1415546-008** |
| **EN055: Ionic Balance - Continued** | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.41** | **0.44** | **0.36** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.35** | **0.35** | **0.30** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP3 | AMPR4 | EMP3 | EMP1 | EMP2 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 30-JUL-2014 09:45 | 30-JUL-2014 10:30 | 30-JUL-2014 09:15 | 30-JUL-2014 08:30 | 30-JUL-2014 09:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1418487-001** | **EB1418487-002** | **EB1418487-003** | **EB1418487-004** | **EB1418487-005** |
| **EA025: Suspended Solids** | | | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | | <5 | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | | <1 | <1 | **246** | <1 | <1 |
| **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 | | **3** | **4** | **5** | **5** | **5** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **3** | **4** | **5** | **5** | **5** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | **1** | <1 | **97** | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **10** | **11** | **793** | **10** | **10** |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | <1 | <1 | **16** | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | <1 | <1 | **50** | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **6** | **7** | **444** | **6** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | | <1 | <1 | **19** | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.01** | <0.01 | **0.01** | **0.02** | **0.03** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | **0.22** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.004** | **0.004** | **0.007** | **0.007** | **0.007** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.002** | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.016** | **0.017** | **0.066** | **0.051** | **0.069** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP3 | AMPR4 | EMP3 | EMP1 | EMP2 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 30-JUL-2014 09:45 | 30-JUL-2014 10:30 | 30-JUL-2014 09:15 | 30-JUL-2014 08:30 | 30-JUL-2014 09:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1418487-001** | **EB1418487-002** | **EB1418487-003** | **EB1418487-004** | **EB1418487-005** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | <0.05 | **0.06** | <0.05 | <0.05 | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.03** | <0.01 | **0.04** | **0.02** | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | **0.18** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.005** | **0.005** | **0.007** | **0.008** | **0.008** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.003** | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.017** | **0.016** | **0.069** | **0.069** | **0.082** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.05** | **0.23** | **0.11** | **0.10** | **0.11** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **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 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | **0.2** | <0.1 | <0.1 | **0.4** | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | **0.2** | <0.1 | <0.1 | **0.4** | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | **0.02** | <0.01 | <0.01 | **0.01** | <0.01 |
| **EN055: Ionic Balance** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP3** | **AMPR4** | **EMP3** | **EMP1** | **EMP2** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 30-JUL-2014 09:45 | 30-JUL-2014 10:30 | 30-JUL-2014 09:15 | 30-JUL-2014 08:30 | 30-JUL-2014 09:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1418487-001** | **EB1418487-002** | **EB1418487-003** | **EB1418487-004** | **EB1418487-005** |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.36** | **0.39** | **24.5** | **0.38** | **0.38** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.26** | **0.30** | **24.7** | **0.26** | **0.26** |
| **Ionic Balance** | ---- | 0.01 | % | ---- | ---- | **0.44** | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: ARMP1<br>Client sampling date / time: 29-JUL-2014 13:30<br>EB1418487-008 | Client sample ID: ARMP2<br>Client sampling date / time: 29-JUL-2014 09:00<br>EB1418487-009 |
|---|---|---|---|---|---|
| **EA025: Suspended Solids** | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | **4** | **4** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **4** | **4** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **11** |
| **ED093F: Dissolved Major Cations** | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.01** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.003** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.002** | **0.008** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | ARMP1 | ARMP2 |
|---|---|---|---|---|---|
| *Client sample ID* | | | | | |
| *Client sampling date / time* | | | | 29-JUL-2014 13:30 | 29-JUL-2014 09:00 |
| | | | | **EB1418487-008** | **EB1418487-009** |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.12** | **0.06** |
| **EG020T: Total Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.02** | **0.03** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | **0.19** |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.008** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.002** | **0.068** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.19** | **0.10** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | **0.1** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | **0.1** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | ARMP1 | ARMP2 |
|---|---|---|---|---|---|
| *Client sample ID* | | | | | |
| *Client sampling date / time* | | | | 29-JUL-2014 13:30 | 29-JUL-2014 09:00 |
| | | | | **EB1418487-008** | **EB1418487-009** |
| **EN055: Ionic Balance - Continued** | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.39** | **0.39** |
| **Total Cations** | ---- | 0.01 | meq/L | **0.30** | **0.30** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP4** | **EMP6** | **EMP7** |
|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 26-JUL-2014 13:00 | 26-JUL-2014 12:00 | 28-JUL-2014 14:15 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1418289-011** | **EB1418289-012** | **EB1418289-014** |
| **EA025: Suspended Solids** | | | | | | | |
| **Suspended Solids (SS)** | ---- | 5 | mg/L | | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | |
| **Total Hardness as CaCO3** | ---- | 1 | mg/L | | <1 | <1 | <1 |
| **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 | | **4** | **4** | **5** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **4** | **4** | **5** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | <1 | <1 | <1 |
| **ED045G: Chloride Discrete analyser** | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **13** | **12** | **11** |
| **ED093F: Dissolved Major Cations** | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **9** | **8** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.003** | **0.005** | **0.011** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.016** | **0.100** | **0.656** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: EMP4 | EMP6 | EMP7 |
|---|---|---|---|---|---|---|
| | | | | Client sampling date / time: 26-JUL-2014 13:00 | 26-JUL-2014 12:00 | 28-JUL-2014 14:15 |
| | | | | EB1418289-011 | EB1418289-012 | EB1418289-014 |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | **0.07** | **0.30** |
| **EG020T: Total Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.006** | **0.012** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.022** | **0.139** | **0.686** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.06** | **0.19** | **0.78** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.01** | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID: EMP4 | EMP6 | EMP7 |
|---|---|---|---|---|---|---|
| | | | | Client sampling date / time: 26-JUL-2014 13:00 | 26-JUL-2014 12:00 | 28-JUL-2014 14:15 |
| | | | | EB1418289-011 | EB1418289-012 | EB1418289-014 |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013** | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP 1 | EMP 2 | ARMP3 |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 25-Aug-2014 08:30 | 25-Aug-2014 08:50 | 25-Aug-2014 09:15 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1441205-001** | **EB1441205-002** | **EB1441205-003** |
| | | | | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | **39** | **6** | **32** |
| **EA065: Total Hardness as CaCO3** | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | <1 |
| **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 | **4** | **2** | **1** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **4** | **2** | **1** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **2** | <1 | <1 |
| **ED045G: Chloride by Discrete Analyser** | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **10** | **10** |
| **ED093F: Dissolved Major Cations** | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **6** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.006** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.053** | **0.077** | **0.011** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP 1** | **EMP 2** | **ARMP3** |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 25-Aug-2014 08:30 | 25-Aug-2014 08:50 | 25-Aug-2014 09:15 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1441205-001** | **EB1441205-002** | **EB1441205-003** |
| | | | | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.01** | <0.01 | **0.01** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.008** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | **0.001** | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.058** | **0.081** | **0.014** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.07** | **0.08** | <0.05 |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.1** | <0.1 | **0.1** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.1** | <0.1 | **0.1** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.01** | <0.01 | **0.02** |
| **EN055: Ionic Balance** | | | | | | |
| **Total Anions** | ---- | 0.01 | meq/L | **0.43** | **0.32** | **0.30** |
| ^ **Total Anions** | ---- | 0.01 | meq/L | **----** | **----** | **----** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP 1** | **EMP 2** | **ARMP3** |
|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 25-Aug-2014 08:30 | 25-Aug-2014 08:50 | 25-Aug-2014 09:15 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1441205-001** | **EB1441205-002** | **EB1441205-003** |
| | | | | | Result | Result | Result |
| **EN055: Ionic Balance - Continued** | | | | | | | |
| **Total Cations** | ---- | 0.01 | meq/L | | **0.26** | **0.26** | **0.26** |
| ^ **Total Cations** | ---- | 0.01 | meq/L | | **----** | **----** | **----** |
| **Ionic Balance** | ---- | 0.01 | % | | **----** | **----** | **----** |
| ^ **Ionic Balance** | ---- | 0.01 | % | | **----** | **----** | **----** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | **90** |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | **90** |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | **110** |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | **110** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP1** | **ARMP2** | **EMP 3** | **ARMP4** |
|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-Aug-2014 09:00 | 24-Aug-2014 12:30 | 25-Aug-2014 10:00 | 25-Aug-2014 10:30 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1441205-006** | **EB1441205-007** | **EB1441205-008** | **EB1441205-009** |
| | | | | Result | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | **8** | **9** | **8** | **6** |
| **EA065: Total Hardness as CaCO3** | | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **413** | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | <1 | **1** | **8** | **1** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | <1 | **1** | **8** | **1** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | <1 | **171** | <1 |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **12** | **12** | **1390** | **13** |
| **ED093F: Dissolved Major Cations** | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **27** | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **84** | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **7** | **817** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **27** | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.22** | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.004** | **0.006** | **0.003** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.002** | **0.008** | **0.064** | **0.014** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP1 | ARMP2 | EMP 3 | ARMP4 |
|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 24-Aug-2014 09:00 | 24-Aug-2014 12:30 | 25-Aug-2014 10:00 | 25-Aug-2014 10:30 |
| Compound | CAS Number | LOR | Unit | | EB1441205-006 | EB1441205-007 | EB1441205-008 | EB1441205-009 |
| | | | | | Result | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| Iron | 7439-89-6 | 0.05 | mg/L | | **0.09** | **0.06** | <0.05 | **0.06** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| Arsenic | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Boron | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | **0.32** | <0.05 |
| Barium | 7440-39-3 | 0.001 | mg/L | | **0.004** | **0.004** | **0.007** | **0.004** |
| Beryllium | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Cobalt | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Chromium | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Copper | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Manganese | 7439-96-5 | 0.001 | mg/L | | **0.002** | **0.007** | **0.066** | **0.014** |
| Nickel | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Lead | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Selenium | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| Vanadium | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| Zinc | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | <0.005 |
| Uranium | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| Iron | 7439-89-6 | 0.05 | mg/L | | **0.21** | **0.28** | **0.08** | **0.21** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | <0.01 | <0.01 | **0.02** | **0.01** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | <0.1 | **0.2** | **0.2** | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | <0.1 | **0.2** | **0.2** | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.01** | **1.09** | **0.02** | **0.01** |
| **EN055: Ionic Balance** | | | | | | | | |
| Total Anions | ---- | 0.01 | meq/L | | **0.33** | **0.35** | **----** | **0.38** |
| ^ Total Anions | ---- | 0.01 | meq/L | | **----** | **----** | **42.9** | **----** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP1 | ARMP2 | EMP 3 | ARMP4 |
|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 24-Aug-2014 09:00 | 24-Aug-2014 12:30 | 25-Aug-2014 10:00 | 25-Aug-2014 10:30 |
| Compound | CAS Number | LOR | Unit | | EB1441205-006 | EB1441205-007 | EB1441205-008 | EB1441205-009 |
| | | | | | Result | Result | Result | Result |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| **Total Cations** | ---- | 0.01 | meq/L | | **0.26** | **0.30** | **----** | **0.30** |
| ^ **Total Cations** | ---- | 0.01 | meq/L | | **----** | **----** | **44.5** | **----** |
| **Ionic Balance** | ---- | 0.01 | % | | **----** | **----** | **----** | **----** |
| ^ **Ionic Balance** | ---- | 0.01 | % | | **----** | **----** | **1.77** | **----** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | ARMP1 | ARMP2 | ARMP3 |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 28-Sep-2014 10:00 | 28-Sep-2014 09:15 | 28-Sep-2014 11:30 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443397-003** | **EB1443397-004** | **EB1443397-005** |
| | | | | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | **6** | **16** |
| **EA065: Total Hardness as CaCO3** | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | <1 |
| **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 | **2** | **2** | **2** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **2** | **2** | **2** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | **1** | **1** |
| **ED045G: Chloride by Discrete Analyser** | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **12** | **12** | **10** |
| **ED093F: Dissolved Major Cations** | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **7** | **6** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.005** | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.002** | **0.008** | **0.011** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP1 | ARMP2 | ARMP3 |
|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Sep-2014 10:00 | 28-Sep-2014 09:15 | 28-Sep-2014 11:30 |
| Compound | CAS Number | LOR | Unit | | EB1443397-003 | EB1443397-004 | EB1443397-005 |
| | | | | | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.07** | **0.06** | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.02** | **0.02** | **0.04** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.005** | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | <0.001 | **0.001** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.002** | **0.008** | **0.016** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.49** | **0.57** | **0.06** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 |
| **EN055: Ionic Balance** | | | | | | | |
| ^ **Ionic Balance** | ---- | 0.01 | % | | **----** | **----** | **----** |
| ^ **Total Anions** | ---- | 0.01 | meq/L | | **0.40** | **0.40** | **0.34** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP1 | ARMP2 | ARMP3 |
|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Sep-2014 10:00 | 28-Sep-2014 09:15 | 28-Sep-2014 11:30 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1443397-003** | **EB1443397-004** | **EB1443397-005** |
| | | | | | Result | Result | Result |
| **EN055: Ionic Balance - Continued** | | | | | | | |
| ^ **Total Cations** | ---- | 0.01 | meq/L | | **0.30** | **0.30** | **0.26** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP4** |
|---|---|---|---|---|
| | | | Client sampling date / time | 28-Sep-2014 12:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443397-006** |
| | | | | Result |
| **EA025: Suspended Solids** | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | **8** |
| **EA065: Total Hardness as CaCO3** | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <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 | **2** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **2** |
| **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 | **12** |
| **ED093F: Dissolved Major Cations** | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.019** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP4** |
|---|---|---|---|---|
| | | | Client sampling date / time | 28-Sep-2014 12:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443397-006** |
| | | | | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.08** |
| **EG020T: Total Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.022** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.34** |
| **EG035F: Dissolved Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.1** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.1** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.02** |
| **EN055: Ionic Balance** | | | | |
| ^ **Total Anions** | ---- | 0.01 | meq/L | **0.40** |
| ^ **Total Cations** | ---- | 0.01 | meq/L | **0.30** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **ARMP4** |
|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Sep-2014 12:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443397-006** | |
| | | | | Result | |
| **EN055: Ionic Balance - Continued** | | | | | |
| ^ **Ionic Balance** | ---- | 0.01 | % | **----** | |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP1 | EMP2 | EMP3 | EMP4 | EMP6 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-Sep-2014 12:15 | 24-Sep-2014 12:00 | 24-Sep-2014 12:30 | 24-Sep-2014 09:00 | 24-Sep-2014 10:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443244-001** | **EB1443244-002** | **EB1443244-003** | **EB1443244-004** | **EB1443244-005** |
| | | | | Result | Result | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | **17** | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **212** | **4** | **11** |
| **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 | **5** | **5** | **11** | **5** | **12** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **5** | **5** | **11** | **5** | **12** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | <1 | **79** | **6** | **2** |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **9** | **9** | **681** | **11** | **13** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **14** | <1 | **1** |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **43** | **1** | **2** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **6** | **392** | **9** | **10** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **18** | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.17** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.006** | **0.006** | **0.001** | **0.008** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | **0.001** | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.052** | **0.068** | **0.063** | **0.021** | **1.60** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP1 | EMP2 | EMP3 | EMP4 | EMP6 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-Sep-2014 12:15 | 24-Sep-2014 12:00 | 24-Sep-2014 12:30 | 24-Sep-2014 09:00 | 24-Sep-2014 10:00 |
| Compound | CAS Number | LOR | Unit | EB1443244-001 | EB1443244-002 | EB1443244-003 | EB1443244-004 | EB1443244-005 |
| | | | | Result | Result | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 | **0.05** | **0.57** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | **0.02** | **0.02** | **0.03** | <0.01 | **0.02** |
| Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Boron | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.17** | <0.05 | <0.05 |
| Barium | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.007** | **0.006** | **0.002** | **0.016** |
| Beryllium | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| Manganese | 7439-96-5 | 0.001 | mg/L | **0.059** | **0.083** | **0.065** | **0.091** | **2.10** |
| Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Selenium | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Vanadium | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Zinc | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | **0.010** |
| Uranium | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Iron | 7439-89-6 | 0.05 | mg/L | **0.07** | **0.09** | **0.07** | **0.12** | **1.50** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **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 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | **0.4** | <0.1 | **0.1** | **0.4** | **0.3** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | **0.4** | <0.1 | **0.1** | **0.4** | **0.3** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | **0.02** | <0.01 | <0.01 | **0.09** | **0.02** |
| **EN055: Ionic Balance** | | | | | | | | |
| ^ Total Anions | ---- | 0.01 | meq/L | **0.35** | **0.35** | **21.1** | **0.54** | **0.65** |
| ^ Total Cations | ---- | 0.01 | meq/L | **0.26** | **0.26** | **21.7** | **0.47** | **0.65** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP1** | **EMP2** | **EMP3** | **EMP4** | **EMP6** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 24-Sep-2014 12:15 | 24-Sep-2014 12:00 | 24-Sep-2014 12:30 | 24-Sep-2014 09:00 | 24-Sep-2014 10:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443244-001** | **EB1443244-002** | **EB1443244-003** | **EB1443244-004** | **EB1443244-005** |
| | | | | Result | Result | Result | Result | Result |
| **EN055: Ionic Balance - Continued** | | | | | | | | |
| ^ **Ionic Balance** | ---- | 0.01 | % | **----** | **----** | **1.56** | **----** | **----** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | **250** |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | **100** |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | **350** |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | **320** |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | **320** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP7** |
|---|---|---|---|---|
| | | | Client sampling date / time | 24-Sep-2014 13:30 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443244-006** |
| | | | | Result |
| **EA025: Suspended Solids** | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | **8** |
| **EA065: Total Hardness as CaCO3** | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <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 | **6** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **6** |
| **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 | **9** |
| **ED093F: Dissolved Major Cations** | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.683** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP7** |
|---|---|---|---|---|
| | | | Client sampling date / time | 24-Sep-2014 13:30 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443244-006** |
| | | | | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.12** |
| **EG020T: Total Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.01** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.019** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | **0.001** |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **1.23** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.99** |
| **EG035F: Dissolved Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.01** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.3** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.3** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.01** |
| **EN055: Ionic Balance** | | | | |
| ^ **Ionic Balance** | ---- | 0.01 | % | **----** |
| ^ **Total Anions** | ---- | 0.01 | meq/L | **0.37** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP7** |
|---|---|---|---|---|---|
| | | | | Client sampling date / time | 24-Sep-2014 13:30 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1443244-006** | |
| | | | | Result | |
| **EN055: Ionic Balance - Continued** | | | | | |
| ^ **Total Cations** | ---- | 0.01 | meq/L | **0.30** | |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | **100** | |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | **100** | |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | **160** | |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | **160** | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP1 | EMP2 | EMP3 | EMP4 | EMP6 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1444592-001** | **EB1444592-002** | **EB1444592-003** | **EB1444592-004** | **EB1444592-005** |
| | | | | Result | Result | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | **6** | **10** |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | **492** | **8** | **20** |
| **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 | **2** | **2** | **11** | **11** | **26** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **2** | **2** | **11** | **11** | **26** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | **1** | **200** | **1** | **2** |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **11** | **1580** | **15** | **18** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **32** | <1 | **3** |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | **100** | **2** | **3** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **6** | **930** | **11** | **12** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **33** | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.40** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.006** | **0.007** | **0.002** | **0.038** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.050** | **0.065** | **0.082** | **0.178** | **5.72** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP1 | EMP2 | EMP3 | EMP4 | EMP6 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1444592-001** | **EB1444592-002** | **EB1444592-003** | **EB1444592-004** | **EB1444592-005** |
| | | | | Result | Result | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 | **0.07** | **1.12** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.02** | **0.02** | **0.01** | **0.02** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.38** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.007** | **0.008** | **0.006** | **0.034** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | **0.002** | **0.001** | <0.001 | **0.001** | **0.001** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.063** | **0.078** | **0.085** | **0.749** | **5.53** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.09** | **0.07** | **0.09** | **0.20** | **2.34** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.02** | <0.01 | **0.01** | <0.01 | **0.10** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.1** | <0.1 | <0.1 | **0.4** | **0.4** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.1** | <0.1 | <0.1 | **0.4** | **0.5** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | **0.02** | **0.03** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP1** | **EMP2** | **EMP3** | **EMP4** | **EMP6** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] | [15-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1444592-001** | **EB1444592-002** | **EB1444592-003** | **EB1444592-004** | **EB1444592-005** |
| | | | | Result | Result | Result | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP7** | **ARMP1** | **ARMP2** |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [15-Oct-2014] | [16-Oct-2014] | [16-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1444592-006** | **EB1444592-009** | **EB1444592-010** |
| | | | | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | **4** | <1 | <1 |
| **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 | **7** | **1** | **2** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **7** | **1** | **2** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | <1 | **1** | **1** |
| **ED045G: Chloride by Discrete Analyser** | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **13** | **13** |
| **ED093F: Dissolved Major Cations** | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | **1** | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **7** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.005** | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.658** | **0.003** | **0.008** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP7** | **ARMP1** | **ARMP2** |
|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [15-Oct-2014] | [16-Oct-2014] | [16-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1444592-006** | **EB1444592-009** | **EB1444592-010** |
| | | | | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.10** | **0.11** | **0.07** |
| **EG020T: Total Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | **0.01** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.007** | **0.005** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | **0.001** | <0.001 | **0.010** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.709** | **0.003** | **0.009** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.60** | **0.50** | **0.56** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.03** | **0.05** | **0.04** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <0.01 | <0.01 | <0.01 |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP7** | **ARMP1** | **ARMP2** |
|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [15-Oct-2014] | [16-Oct-2014] | [16-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1444592-006** | **EB1444592-009** | **EB1444592-010** |
| | | | | | Result | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP3** | **ARMP4** |
|---|---|---|---|---|---|
| | | | Client sampling date / time | [16-Oct-2014] | [16-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1444592-011** | **EB1444592-012** |
| | | | | Result | Result |
| **EA025: Suspended Solids** | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | **2** | **2** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **2** | **2** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **1** | **1** |
| **ED045G: Chloride by Discrete Analyser** | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **13** |
| **ED093F: Dissolved Major Cations** | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | **0.002** | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.010** | **0.022** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **ARMP3** | **ARMP4** |
|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [16-Oct-2014] | [16-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1444592-011** | **EB1444592-012** |
| | | | | | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | <0.05 | **0.07** |
| **EG020T: Total Metals by ICP-MS** | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.02** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.007** | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.010** | **0.023** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | <0.05 | **0.34** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | **0.03** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | **0.1** | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | **0.1** | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | **0.01** | <0.01 |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | **70** |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **ARMP3** | **ARMP4** |
|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [16-Oct-2014] | [16-Oct-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1444592-011** | **EB1444592-012** |
| | | | | | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | **70** |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP1** | **EMP2** | **EMP3** | **EMP4** | **EMP6** |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1446229-001** | **EB1446229-002** | **EB1446229-003** | **EB1446229-004** | **EB1446229-005** |
| | | | | Result | Result | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | **12** | **48** | **14** |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | **12** | **566** | **29** | **38** |
| **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 | **439** | **4** | **13** | **42** | **72** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **439** | **4** | **13** | **42** | **72** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **2** | **4** | **224** | <1 | <1 |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **9** | **30** | **1750** | **22** | **22** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **37** | **5** | **7** |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | **3** | **115** | **4** | **5** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **6** | **25** | **1060** | **17** | **15** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **39** | **3** | **3** |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | **0.01** | <0.01 | <0.01 | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.46** | <0.05 | **0.07** |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.007** | **0.007** | **0.012** | **0.170** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.003** |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.040** | **0.062** | **0.068** | **2.24** | **11.3** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP1 | EMP2 | EMP3 | EMP4 | EMP6 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1446229-001** | **EB1446229-002** | **EB1446229-003** | **EB1446229-004** | **EB1446229-005** |
| | | | | Result | Result | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 | **0.08** | **2.03** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.02** | **0.03** | **0.03** | **0.02** | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | **0.002** | **0.002** |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.48** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.006** | **0.007** | **0.008** | **0.102** | **0.202** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | **0.002** | **0.003** |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.060** | **0.065** | **0.076** | **9.62** | **13.9** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **0.07** | **0.06** | **0.16** | **5.26** | **8.98** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **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 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.5** | <0.1 | **0.6** | **2.1** | **1.0** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.5** | <0.1 | **0.6** | **2.1** | **1.0** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.10** | <0.01 | **0.06** | **0.17** | **0.11** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | **180** | **100** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP1** | **EMP2** | **EMP3** | **EMP4** | **EMP6** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 | 12-Nov-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1446229-001** | **EB1446229-002** | **EB1446229-003** | **EB1446229-004** | **EB1446229-005** |
| | | | | | Result | Result | Result | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | **90** | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 | **270** | **100** |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | **240** | **130** |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 | **240** | **130** |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP7** |
|---|---|---|---|---|
| | | | Client sampling date / time | 12-Nov-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1446229-006** |
| | | | | Result |
| **EA025: Suspended Solids** | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | **12** |
| **EA065: Total Hardness as CaCO3** | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | **4** |
| **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 | **24** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **24** |
| **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 | **10** |
| **ED093F: Dissolved Major Cations** | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | **1** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.014** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | **0.002** |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **5.10** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP7** |
|---|---|---|---|---|---|
| | | | | Client sampling date / time | 12-Nov-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1446229-006** | |
| | | | | Result | |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | |
| **EG020T: Total Metals by ICP-MS** | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.078** | |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | **0.003** | |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **5.66** | |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **4.11** | |
| **EG035F: Dissolved Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.01** | |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.2** | |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.2** | |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.06** | |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 | |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP7** |
|---|---|---|---|---|---|
| | | | | Client sampling date / time | 12-Nov-2014 15:00 |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1446229-006** | |
| | | | | Result | |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | EMP1 | EMP2 | EMP3 | EMP4 | EMP6 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1448260-001** | **EB1448260-002** | **EB1448260-003** | **EB1448260-004** | **EB1448260-005** |
| | | | | Result | Result | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | **28** | <5 | **13** | <5 | **12** |
| **EA065: Total Hardness as CaCO3** | | | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | **4** | **754** | **26** | **31** |
| **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 | **2** | **1** | **15** | **35** | **38** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **2** | **1** | **15** | **35** | **38** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **2** | **3** | **257** | <1 | <1 |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **16** | **2340** | **21** | **20** |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | **48** | **4** | **6** |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | **1** | **154** | **4** | **4** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **9** | **1390** | **17** | **13** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | **49** | **4** | **4** |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.02** | **0.03** | **0.01** | **0.01** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | **0.56** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.009** | **0.010** | **0.012** | **0.012** | **0.064** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.078** | **0.092** | **0.117** | **0.758** | **4.00** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | EMP1 | EMP2 | EMP3 | EMP4 | EMP6 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EB1448260-001** | **EB1448260-002** | **EB1448260-003** | **EB1448260-004** | **EB1448260-005** |
| | | | | | Result | Result | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | **0.33** | **1.62** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.27** | **0.05** | **0.13** | **0.04** | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | **0.002** | **0.002** | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | **0.58** | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.013** | **0.010** | **0.013** | **0.018** | **0.075** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | **0.0005** | **0.0001** | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | **0.002** | <0.001 | **0.001** | <0.001 | **0.001** |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | **0.001** | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.002** | <0.001 | **0.002** | **0.001** | **0.011** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.727** | **0.107** | **0.140** | **1.14** | **4.71** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | **0.001** | <0.001 | **0.001** |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | **0.001** | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | **0.006** | <0.005 | <0.005 | <0.005 | **0.007** |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **1.76** | **0.08** | **0.26** | **1.56** | **3.51** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | **0.07** | **0.01** | **0.02** | **0.01** | **0.02** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | **0.3** | <0.1 | **0.1** | **0.7** | **0.8** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | **0.4** | <0.1 | **0.1** | **0.7** | **0.8** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | **0.04** | <0.01 | <0.01 | **0.03** | **0.06** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP1** | **EMP2** | **EMP3** | **EMP4** | **EMP6** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] | [10-Dec-2014] |
| Compound | CAS Number | LOR | Unit | | **EB1448260-001** | **EB1448260-002** | **EB1448260-003** | **EB1448260-004** | **EB1448260-005** |
| | | | | | Result | Result | Result | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP7** |
|---|---|---|---|---|
| | | | Client sampling date / time | [10-Dec-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1448260-006** |
| | | | | Result |
| **EA025: Suspended Solids** | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | **6** |
| **EA065: Total Hardness as CaCO3** | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | **4** |
| **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 | **14** |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **14** |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **2** |
| **ED045G: Chloride by Discrete Analyser** | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **10** |
| **ED093F: Dissolved Major Cations** | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | **1** |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.018** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | **0.002** |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | **0.001** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **4.08** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **EMP7** |
|---|---|---|---|---|
| | | | Client sampling date / time | [10-Dec-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1448260-006** |
| | | | | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 |
| **EG020T: Total Metals by ICP-MS** | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.030** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | **0.002** |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **4.47** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **2.64** |
| **EG035F: Dissolved Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **0.04** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **0.2** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **0.2** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.01** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **EMP7** |
|---|---|---|---|---|---|
| | | | | Client sampling date / time | [10-Dec-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1448260-006** | |
| | | | | Result | |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP1** | **ARMP2** | **ARMP3** | **ARMP4** |
|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [14-Dec-2014] | [14-Dec-2014] | [14-Dec-2014] | [14-Dec-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1448502-001** | **EB1448502-002** | **EB1448502-003** | **EB1448502-004** |
| | | | | Result | Result | Result | Result |
| **EA025: Suspended Solids** | | | | | | | |
| ^ **Suspended Solids (SS)** | ---- | 5 | mg/L | <5 | <5 | <5 | <5 |
| **EA065: Total Hardness as CaCO3** | | | | | | | |
| ^ **Total Hardness as CaCO3** | ---- | 1 | mg/L | <1 | <1 | <1 | <1 |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | **1** | **1** | <1 | <1 |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | **1** | **1** | <1 | <1 |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | **2** | <1 | **2** | **2** |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | **11** | **12** | **10** | **11** |
| **ED093F: Dissolved Major Cations** | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Magnesium** | 7439-95-4 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **Sodium** | 7440-23-5 | 1 | mg/L | **7** | **7** | **7** | **7** |
| **Potassium** | 7440-09-7 | 1 | mg/L | <1 | <1 | <1 | <1 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | **0.02** | <0.01 |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | **0.004** | **0.004** | **0.004** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.003** | **0.010** | **0.015** | **0.023** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | <0.005 | <0.005 |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | ARMP1 | ARMP2 | ARMP3 | ARMP4 |
|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [14-Dec-2014] | [14-Dec-2014] | [14-Dec-2014] | [14-Dec-2014] |
| Compound | CAS Number | LOR | Unit | | EB1448502-001 | EB1448502-002 | EB1448502-003 | EB1448502-004 |
| | | | | | Result | Result | Result | Result |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.12** | **0.06** | <0.05 | **0.06** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | | **0.03** | **0.02** | **0.03** | **0.02** |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Boron** | 7440-42-8 | 0.05 | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 |
| **Barium** | 7440-39-3 | 0.001 | mg/L | | **0.006** | **0.005** | **0.005** | **0.004** |
| **Beryllium** | 7440-41-7 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | **0.0002** | <0.0001 | **0.0003** | <0.0001 |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.002** | **0.002** | **0.001** | **0.001** |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | | **0.004** | **0.010** | **0.016** | **0.024** |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | <0.001 | **0.001** | <0.001 |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| **Vanadium** | 7440-62-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | <0.005 | <0.005 | **0.006** |
| **Uranium** | 7440-61-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | <0.001 |
| **Iron** | 7439-89-6 | 0.05 | mg/L | | **0.74** | **0.48** | <0.05 | **0.31** |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | **0.02** | <0.01 | **0.01** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | <0.1 |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | **0.01** | **0.01** | <0.01 | <0.01 |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | <50 |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | **190** | <100 | <100 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | Client sample ID | **ARMP1** | **ARMP2** | **ARMP3** | **ARMP4** |
|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | [14-Dec-2014] | [14-Dec-2014] | [14-Dec-2014] | [14-Dec-2014] |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **EB1448502-001** | **EB1448502-002** | **EB1448502-003** | **EB1448502-004** |
| | | | | Result | Result | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | <50 | <50 | <50 | <50 |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | <50 | **190** | <50 | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | |
| **>C10 - C16 Fraction** | >C10_C16 | 100 | µg/L | <100 | <100 | <100 | <100 |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | <100 | **170** | <100 | <100 |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | <100 | <100 | <100 | <100 |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | <100 | **170** | <100 | <100 |

# APPENDIX C

## *Surface Water Quality Statistics*

## Summary Statistics: Emerald River – EMP1

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 39 | 5 | 5 | 16.34 | -6.34 |
| pH | pH units | 0.1 | 12 | 5.12 | 5.9 | 5.5 | 5.646 | 5.74 | 5.26 |
| Redox Potential | (mV) | 1 | 11 | 31 | 304 | 150 | 262 | 238.13 | 61.87 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 45.2 | 410 | 55.85 | 67.56 | 158.46 | -46.76 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.027 | 0.049 | 0.035 | 0.038 | 0.04 | 0.03 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 60.5 | 83 | 72.6 | 78.24 | 80.58 | 64.62 |
| Turbidity | (NTU) | 1 | 12 | 1.16 | 14.3 | 2.125 | 2.538 | 5.69 | -1.44 |
| Total Hardness | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 1 | 439 | 5 | 5 | 130.56 | -120.56 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 1 | 439 | 5 | 5 | 130.56 | -120.56 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 9 | 0.3 | 0.43 | 0.37 | 0.388 | 0.41 | 0.33 |
| Total Cations | meq/L | 0.01 | 9 | 0.22 | 0.3 | 0.26 | 0.26 | 0.28 | 0.24 |
| Sulfate | mg/L | 1 | 12 | 1 | 2 | 1 | 1.8 | 1.45 | 0.55 |
| Chloride | mg/L | 1 | 12 | 8 | 11 | 10 | 10.8 | 10.97 | 9.03 |
| Calcium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Magnesium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Potassium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Sodium | mg/L | 1 | 12 | 5 | 7 | 6 | 6 | 6.60 | 5.40 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.010 | 0.050 | 0.015 | 0.028 | 0.028 | 0.002 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Barium | mg/L | 0.001 | 12 | 0.004 | 0.009 | 0.006 | 0.007 | 0.007 | 0.005 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.004 | 0.001 | 0.001 | 0.0019 | 0.0001 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 0.24 | 0.05 | 0.10 | 0.11 | -0.01 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Manganese | mg/L | 0.001 | 12 | 0.022 | 0.078 | 0.051 | 0.054 | 0.065 | 0.036 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.018 | 0.005 | 0.005 | 0.009 | 0.001 |

## Summary Statistics: Emerald River – EMP2

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 6 | 5 | 5 | 5.29 | 4.71 |
| pH | pH units | 0.1 | 12 | 5.06 | 6.06 | 5.525 | 5.7 | 5.79 | 5.26 |
| Redox Potential | (mV) | 1 | 11 | 24 | 345 | 146 | 318 | 254.30 | 37.70 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 44.3 | 160.2 | 54.55 | 60.56 | 86.82 | 22.28 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.03 | 0.10 | 0.036 | 0.039 | 0.06 | 0.01 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 71.5 | 88.9 | 77.75 | 86.58 | 84.04 | 71.46 |
| Turbidity | (NTU) | 1 | 12 | 1.57 | 8.65 | 2.775 | 3.86 | 4.64 | 0.91 |
| Total Hardness | mg/L | 1 | 12 | 1 | 12 | 1 | 1 | 4.21 | -2.21 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 1 | 6 | 4.5 | 5 | 6.26 | 2.74 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 1 | 6 | 4.5 | 5 | 6.26 | 2.74 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 9 | 0.3 | 0.4 | 0.35 | 0.374 | 0.38 | 0.32 |
| Total Cations | meq/L | 0.01 | 9 | 0.22 | 0.3 | 0.26 | 0.26 | 0.28 | 0.24 |
| Sulfate | mg/L | 1 | 12 | 1 | 4 | 1 | 1 | 2.00 | 0.00 |
| Chloride | mg/L | 1 | 12 | 8 | 30 | 10 | 10.8 | 16.06 | 3.94 |
| Calcium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Magnesium | mg/L | 1 | 12 | 1 | 3 | 1 | 1 | 1.58 | 0.42 |
| Potassium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Sodium | mg/L | 1 | 12 | 5 | 25 | 6 | 6.8 | 11.49 | 0.51 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.04 | 0.02 | 0.03 | 0.03 | 0.01 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.004 | 0.01 | 0.0065 | 0.007 | 0.01 | 0.00 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 0.16 | 0.05 | 0.136 | 0.10 | 0.00 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.044 | 0.092 | 0.0635 | 0.0754 | 0.08 | 0.05 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |

## Summary Statistics: Emerald River – EMP3

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 24 | 5 | 11.2 | 10.79 | -0.79 |
| pH | pH units | 0.1 | 12 | 5.91 | 6.67 | 6.2 | 6.38 | 6.43 | 5.97 |
| Redox Potential | (mV) | 1 | 11 | 53 | 273 | 151 | 252 | 225.4 | 76.6 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 2375 | 7660 | 3120.5 | 4706.8 | 4725.5 | 1515.5 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 1.544 | 4.98 | 2.027 | 3.0598 | 3.07 | 0.98 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 67 | 93.9 | 80.8 | 87.32 | 88.90 | 72.70 |
| Turbidity | (NTU) | 1 | 12 | 1.72 | 5.75 | 3.675 | 4.566 | 4.83 | 2.52 |
| Total Hardness | mg/L | 1 | 12 | 186 | 754 | 335.5 | 476.2 | 501.43 | 169.57 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 5 | 16 | 11 | 12.6 | 14.23 | 7.77 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 5 | 16 | 11 | 12.6 | 14.23 | 7.77 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 9 | 20.6 | 42.9 | 28.6 | 34.06 | 35.84 | 21.36 |
| Total Cations | meq/L | 0.01 | 9 | 21.7 | 44.5 | 30.6 | 36.04 | 38.23 | 22.97 |
| Sulfate | mg/L | 1 | 12 | 79 | 257 | 139.5 | 194.2 | 196.49 | 82.51 |
| Chloride | mg/L | 1 | 12 | 666 | 2340 | 997 | 1542 | 1504.26 | 489.74 |
| Calcium | mg/L | 1 | 12 | 12 | 48 | 21.5 | 31 | 32.13 | 10.87 |
| Magnesium | mg/L | 1 | 12 | 38 | 154 | 68.5 | 96.8 | 102.34 | 34.66 |
| Potassium | mg/L | 1 | 12 | 13 | 49 | 24 | 32.2 | 34.50 | 13.50 |
| Sodium | mg/L | 1 | 12 | 392 | 1390 | 595 | 907.4 | 898.68 | 291.32 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.03 | 0.01 | 0.01 | 0.02 | 0.00 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.004 | 0.012 | 0.007 | 0.0078 | 0.01 | 0.01 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.15 | 0.56 | 0.22 | 0.38 | 0.35 | 0.09 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 0.18 | 0.05 | 0.104 | 0.09 | 0.01 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.051 | 0.117 | 0.067 | 0.0798 | 0.09 | 0.05 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |

## Summary Statistics: Emerald River – EMP4

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 48 | 5 | 5.8 | 17.55 | -7.55 |
| pH | pH units | 0.1 | 12 | 5.31 | 6.72 | 6.11 | 6.34 | 6.48 | 5.74 |
| Redox Potential | (mV) | 1 | 11 | 33 | 276 | 141 | 184 | 204.33 | 77.67 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 39.9 | 188.4 | 67.65 | 89.52 | 115.56 | 19.74 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.026 | 0.1225 | 0.044 | 0.0581 | 0.0753 | 0.0127 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 14.6 | 100 | 77.25 | 95.48 | 106.07 | 48.43 |
| Turbidity | (NTU) | 1 | 12 | 1.24 | 58.5 | 2.92 | 6.188 | 18.943 | -13.103 |
| Total Hardness | mg/L | 1 | 12 | 1 | 29 | 1 | 7.2 | 11.16 | -9.16 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 1 | 42 | 6 | 10.4 | 19.15 | -7.15 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 1 | 42 | 6 | 10.4 | 19.15 | -7.15 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 7 | 0.37 | 0.59 | 0.41 | 0.514 | 0.50 | 0.32 |
| Total Cations | meq/L | 0.01 | 7 | 0.26 | 0.47 | 0.3 | 0.382 | 0.38 | 0.22 |
| Sulfate | mg/L | 1 | 12 | 1 | 16 | 1 | 1 | 5.44 | -3.44 |
| Chloride | mg/L | 1 | 12 | 8 | 22 | 11 | 14.6 | 15.77 | 6.23 |
| Calcium | mg/L | 1 | 12 | 1 | 5 | 1 | 1 | 2.38 | -0.38 |
| Magnesium | mg/L | 1 | 12 | 1 | 4 | 1 | 1.8 | 2.16 | -0.16 |
| Potassium | mg/L | 1 | 12 | 1 | 4 | 1 | 1 | 2.00 | 0.00 |
| Sodium | mg/L | 1 | 12 | 6 | 17 | 9 | 10.6 | 12.75 | 5.25 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.06 | 0.01 | 0.018 | 0.03 | -0.01 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.001 | 0.012 | 0.004 | 0.0076 | 0.01 | 0.00 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 0.33 | 0.07 | 0.104 | 0.15 | -0.01 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.002 | 2.24 | 0.0665 | 0.2976 | 0.71 | -0.57 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |

## Summary Statistics: Emerald River – EMP6

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 40 | 5 | 11.6 | 15.08 | -5.08 |
| pH | pH units | 0.1 | 12 | 4.92 | 6.71 | 6.03 | 6.52 | 6.55 | 5.52 |
| Redox Potential | (mV) | 1 | 11 | 40 | 305 | 158 | 219 | 240.48 | 75.52 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 44.7 | 219.5 | 71.65 | 117.02 | 126.22 | 17.08 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.029 | 0.145 | 0.047 | 0.076 | 0.082 | 0.011 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 21.9 | 96.2 | 73.7 | 92.7 | 101.8 | 45.5 |
| Turbidity | (NTU) | 1 | 12 | 1.32 | 23.6 | 3.105 | 9.31 | 10.18 | -3.97 |
| Total Hardness | mg/L | 1 | 12 | 1 | 38 | 1 | 18.2 | 14.36 | -12.36 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 4 | 72 | 9 | 23.2 | 29.18 | -11.18 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 4 | 72 | 9 | 23.2 | 29.18 | -11.18 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 7 | 0.36 | 0.65 | 0.44 | 0.51 | 0.54 | 0.34 |
| Total Cations | meq/L | 0.01 | 7 | 0.26 | 0.65 | 0.3 | 0.35 | 0.43 | 0.17 |
| Sulfate | mg/L | 1 | 12 | 1 | 4 | 1 | 2 | 1.90 | 0.10 |
| Chloride | mg/L | 1 | 12 | 8 | 22 | 12 | 17 | 16.51 | 7.49 |
| Calcium | mg/L | 1 | 12 | 1 | 7 | 1 | 2.6 | 3.15 | -1.15 |
| Magnesium | mg/L | 1 | 12 | 1 | 5 | 1 | 2.8 | 2.40 | -0.40 |
| Potassium | mg/L | 1 | 12 | 1 | 4 | 1 | 1 | 2.00 | 0.00 |
| Sodium | mg/L | 1 | 12 | 6 | 15 | 8 | 11.6 | 10.79 | 5.21 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.08 | 0.01 | 0.038 | 0.03 | -0.01 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.003 | 0.17 | 0.0055 | 0.0322 | 0.05 | -0.04 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.07 | 0.05 | 0.05 | 0.06 | 0.04 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.003 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 2.03 | 0.125 | 1.01 | 0.82 | -0.57 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.018 | 11.3 | 0.1365 | 3.52 | 3.61 | -3.34 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |

## Summary Statistics: Emerald River – EMP7

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 12 | 5 | 5.8 | 7.11 | 2.89 |
| pH | pH units | 0.1 | 12 | 5.07 | 6.47 | 5.775 | 5.988 | 6.149 | 5.401 |
| Redox Potential | (mV) | 1 | 11 | 37 | 267 | 157 | 240 | 234.18 | 79.82 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 37.5 | 107.6 | 59.65 | 88.34 | 81.892 | 37.408 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.024 | 0.070 | 0.039 | 0.057 | 0.0530 | 0.0246 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 38.8 | 86.5 | 76.6 | 78.72 | 89.77 | 63.43 |
| Turbidity | (NTU) | 1 | 12 | 1.57 | 14.1 | 3.74 | 4.642 | 7.562 | -0.082 |
| Total Hardness | mg/L | 1 | 12 | 1 | 4 | 1 | 3.4 | 2.36 | -0.36 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 3 | 24 | 5.5 | 7.8 | 11.43 | -0.43 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 3 | 24 | 5.5 | 7.8 | 11.43 | -0.43 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 7 | 0.28 | 0.43 | 0.37 | 0.394 | 0.42 | 0.32 |
| Total Cations | meq/L | 0.01 | 7 | 0.22 | 0.3 | 0.26 | 0.3 | 0.30 | 0.22 |
| Sulfate | mg/L | 1 | 12 | 1 | 2 | 1 | 1.8 | 1.45 | 0.55 |
| Chloride | mg/L | 1 | 12 | 7 | 11 | 10 | 11 | 11.38 | 8.62 |
| Calcium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Magnesium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Potassium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Sodium | mg/L | 1 | 12 | 5 | 7 | 7 | 7 | 7.79 | 6.21 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.004 | 0.018 | 0.0065 | 0.0104 | 0.01 | 0.00 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.002 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 0.61 | 0.105 | 0.28 | 0.27 | -0.06 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.048 | 5.1 | 0.396 | 0.678 | 2.09 | -1.30 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |

## Summary Statistics: Amagula River – ARMP1

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 8 | 5 | 5 | 6.17 | 3.83 |
| pH | pH units | 0.1 | 12 | 4.51 | 5.46 | 5.14 | 5.266 | 5.4196 | 4.8604 |
| Redox Potential | (mV) | 1 | 11 | 98 | 281 | 149 | 170 | 198.22 | 99.78 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 43.1 | 99.6 | 58.5 | 63.48 | 73.57 | 43.43 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.0285 | 0.0648 | 0.03805 | 0.0412 | 0.0478 | 0.0283 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 67 | 94 | 80.05 | 90.5 | 89.44 | 70.66 |
| Turbidity | (NTU) | 1 | 12 | 1.06 | 9.47 | 3.33 | 4.432 | 5.660 | 1.000 |
| Total Hardness | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 1 | 5 | 2 | 4 | 3.61 | 0.39 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 1 | 5 | 2 | 4 | 3.61 | 0.39 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 9 | 0.33 | 0.42 | 0.38 | 0.4 | 0.41 | 0.35 |
| Total Cations | meq/L | 0.01 | 9 | 0.17 | 0.3 | 0.26 | 0.3 | 0.30 | 0.22 |
| Sulfate | mg/L | 1 | 12 | 1 | 3 | 1 | 1.8 | 1.65 | 0.35 |
| Chloride | mg/L | 1 | 12 | 9 | 13 | 11 | 12 | 12.24 | 9.76 |
| Calcium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Magnesium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Potassium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Sodium | mg/L | 1 | 12 | 4 | 7 | 6 | 7 | 6.94 | 5.06 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.05 | 0.01 | 0.01 | 0.02 | 0.00 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.002 | 0.005 | 0.003 | 0.004 | 0.00 | 0.00 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.07 | 0.12 | 0.1 | 0.11 | 0.12 | 0.08 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.001 | 0.003 | 0.002 | 0.003 | 0.00 | 0.00 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |

## Summary Statistics: Amagula River – ARMP2

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 9 | 5 | 5.8 | 6.54 | 3.46 |
| pH | pH units | 0.1 | 12 | 4.92 | 5.72 | 5.295 | 5.506 | 5.538 | 5.052 |
| Redox Potential | (mV) | 1 | 11 | 121 | 256 | 160 | 195 | 205.27 | 114.73 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 44.6 | 87.1 | 59.75 | 72.18 | 73.66 | 45.84 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.0291 | 0.0565 | 0.03885 | 0.04646 | 0.0478 | 0.0299 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 67.3 | 96 | 85.55 | 90.1 | 93.61 | 77.49 |
| Turbidity | (NTU) | 1 | 12 | 1.43 | 19.1 | 3.035 | 3.408 | 7.800 | -1.727 |
| Total Hardness | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 1 | 5 | 3 | 5 | 4.73 | 1.27 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 1 | 5 | 3 | 5 | 4.73 | 1.27 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 9 | 0.3 | 0.45 | 0.4 | 0.422 | 0.45 | 0.35 |
| Total Cations | meq/L | 0.01 | 9 | 0.17 | 0.3 | 0.26 | 0.3 | 0.30 | 0.22 |
| Sulfate | mg/L | 1 | 12 | 1 | 2 | 1 | 1.8 | 1.45 | 0.55 |
| Chloride | mg/L | 1 | 12 | 9 | 13 | 11.5 | 12 | 12.77 | 10.23 |
| Calcium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Magnesium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Potassium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Sodium | mg/L | 1 | 12 | 4 | 7 | 7 | 7 | 7.98 | 6.02 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.002 | 0.005 | 0.004 | 0.004 | 0.01 | 0.00 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.06 | 0.1 | 0.075 | 0.09 | 0.09 | 0.06 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.004 | 0.01 | 0.008 | 0.008 | 0.01 | 0.01 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.011 | 0.005 | 0.005 | 0.01 | 0.00 |

## Summary Statistics: Amagula River – ARMP3

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 32 | 5 | 6.6 | 13.09 | -3.09 |
| pH | pH units | 0.1 | 12 | 4.57 | 5.12 | 4.84 | 5.008 | 5.001 | 4.679 |
| Redox Potential | (mV) | 1 | 11 | 131 | 331 | 201 | 254 | 267.36 | 134.64 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 2.4 | 112.9 | 59.1 | 73.64 | 84.97 | 33.23 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.0016 | 0.0734 | 0.03845 | 0.0418 | 0.0551 | 0.0218 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 12 | 60.8 | 50.3 | 51.58 | 62.21 | 38.39 |
| Turbidity | (NTU) | 1 | 12 | 1.7 | 6.85 | 2.81 | 3.986 | 4.28 | 1.34 |
| Total Hardness | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 1 | 5 | 2.5 | 4 | 3.87 | 1.13 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 1 | 5 | 2.5 | 4 | 3.87 | 1.13 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 9 | 0.3 | 0.44 | 0.36 | 0.4 | 0.41 | 0.31 |
| Total Cations | meq/L | 0.01 | 9 | 0.26 | 0.35 | 0.26 | 0.3 | 0.29 | 0.23 |
| Sulfate | mg/L | 1 | 12 | 1 | 2 | 1 | 1 | 1.39 | 0.61 |
| Chloride | mg/L | 1 | 12 | 9 | 12 | 10 | 10.8 | 10.83 | 9.17 |
| Calcium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Magnesium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Potassium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Sodium | mg/L | 1 | 12 | 6 | 8 | 6 | 7 | 6.67 | 5.33 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.07 | 0.01 | 0.036 | 0.03 | -0.01 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.003 | 0.007 | 0.004 | 0.004 | 0.00 | 0.00 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.003 | 0.001 | 0.0018 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 0.14 | 0.05 | 0.058 | 0.08 | 0.02 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.01 | 0.088 | 0.022 | 0.052 | 0.05 | 0.00 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |

## Summary Statistics: Amagula River – ARMP4

| Parameter | Units | Limit of Reporting | No. Samples Analysed | Minimum | Maximum | Median | 80th Percentile | Median +1SD | Median -1SD |
|---|---|---|---|---|---|---|---|---|---|
| **Physical and Chemical Parameters** | | | | | | | | | |
| Suspended Solids | mg/L | 5 | 12 | 5 | 8 | 5 | 5.8 | 5.90 | 4.10 |
| pH | pH units | 0.1 | 12 | 5.12 | 5.99 | 5.54 | 5.63 | 5.79 | 5.29 |
| Redox Potential | (mV) | 1 | 11 | 74 | 306 | 157 | 233 | 226.35 | 87.65 |
| Electrical Conductivity | (µS/cm) | 1 | 12 | 44.6 | 92.7 | 56.15 | 61.44 | 68.06 | 44.24 |
| Total Dissolved Solids | (g/L) | 0.01 | 12 | 0.029 | 0.0603 | 0.0364 | 0.03988 | 0.04416 | 0.02864 |
| Dissolved Oxygen | (% sat) | 0.1 | 12 | 67.3 | 98.3 | 91.45 | 95.02 | 99.75 | 83.15 |
| Turbidity | (NTU) | 1 | 12 | 1.23 | 4.79 | 2.725 | 3.446 | 3.807 | 1.643 |
| Total Hardness | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Bicarbonate Alkalinity | mg/L | 1 | 12 | 1 | 6 | 2 | 4.8 | 3.85 | 0.15 |
| Carbonate Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Hydroxide Alkalinity | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Total Alkalinity | mg/L | 1 | 12 | 1 | 6 | 2 | 4.8 | 3.85 | 0.15 |
| **Major Ions** | | | | | | | | | |
| Total Anions | meq/L | 0.01 | 9 | 0.29 | 0.43 | 0.38 | 0.394 | 0.42 | 0.34 |
| Total Cations | meq/L | 0.01 | 9 | 0.22 | 0.3 | 0.26 | 0.3 | 0.29 | 0.23 |
| Sulfate | mg/L | 1 | 12 | 1 | 2 | 1 | 1.8 | 1.45 | 0.55 |
| Chloride | mg/L | 1 | 12 | 8 | 13 | 11 | 12 | 12.62 | 9.38 |
| Calcium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Magnesium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Potassium | mg/L | 1 | 12 | 1 | 1 | 1 | 1 | 1.00 | 1.00 |
| Sodium | mg/L | 1 | 12 | 5 | 7 | 6.5 | 7 | 7.28 | 5.72 |
| **Metals and Metalloids (Dissolved)** | | | | | | | | | |
| Aluminium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Arsenic | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Barium | mg/L | 0.001 | 12 | 0.002 | 0.004 | 0.0035 | 0.004 | 0.00 | 0.00 |
| Beryllium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Boron | mg/L | 0.05 | 12 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cadmium | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Chromium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Cobalt | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Copper | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Iron | mg/L | 0.05 | 12 | 0.05 | 0.1 | 0.065 | 0.078 | 0.08 | 0.05 |
| Lead | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Manganese | mg/L | 0.001 | 12 | 0.007 | 0.023 | 0.013 | 0.0198 | 0.02 | 0.01 |
| Mercury | mg/L | 0.0001 | 12 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00 | 0.00 |
| Nickel | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Selenium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Uranium | mg/L | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.00 | 0.00 |
| Vanadium | mg/L | 0.01 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Zinc | mg/L | 0.005 | 12 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |