TOTAL E&P PNG LIMITED

PAPUA LNG

Upstream Environmental Impact Statement

Volume 2: Environmental and Social Baseline

Part 1
Upstream Geology, Terrain and Soils Baseline Report

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global environmental solutions

Papua LNG Project

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Upstream Geology, Terrain and Soils Baseline Report

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Papua LNG Project

Upstream Geology, Terrain and Soils Baseline Report

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Executive Summary

Background

Joint venture partners, Total E&P PNG Limited (TEP PNG) (40.13%), ExxonMobil (XOM) (37.03%) and Oil Search Limited (Oil Search) (22.84%), are currently planning the development of the Elk-Antelope gas field, which is located in the Gulf Province, Papua New Guinea. The gas fields are located within Petroleum Retention License 15 (PRL-15). The Project will include infrastructure development inside PRL-15, and the construction of gas and condensate pipelines (export pipeline) to an LNG Plant site at Caution Bay, 20 km northwest of Port Moresby. TEP PNG, a wholly owned subsidiary of TOTAL S.A., has the largest interest in the Elk-Antelope gas field and is the operator of the Papua LNG Project (the Project) on behalf of the other joint venture partners.

For the purpose of the EIS/ESHIA, a baseline earth sciences study is required to assess the nature of geology, terrain and soils within the Project area of influence and to assess the potential for these aspects to be impacted by Project activities. The fieldwork component of the geology, terrain and soil survey was undertaken on November 15th to 21st 2016, for the “upstream” survey area, consisting of sites within PRL-15 and the onshore export pipeline corridor. The field survey comprised investigation of 27 sites located in the and around the upstream components of the Project including the well pad areas, central processing facility and the proposed pipeline route. Several ground-truthing assessments were undertaken at these sites including:

- Localized geology and geomorphology landscape assessment;
- A terrain and landform assessment;
- Soil profile excavation and assessment of soil type and characteristics; and
- Collection of soil samples from nominated sites for analytical testing.

The objective of this study is to provide an integrated geology, terrain and soils assessment for the upstream area of the Project.

Geology

The study area is located within central Papua New Guinea, in the foothills, alluvial plains and beach areas south of the Central Range within the Papuan Fold Belt. The study area is located within the eastern section of the Papuan basin, the sediments of which underlie the southern plains and are exposed in the adjacent fold-thrust belt in which the Elk-Antelope gas field is located. The predominant rock types encountered throughout the area are of a sedimentary origin, including interbedded, mudstones, siltstones, sandstones, conglomerates, and limestone. Carbonaceous rocks in the form of carbonaceous mudstones and coal occur as detrital angular, cobble sized particles in Oyomo Creek in the area of the proposed CPF. Varying levels of structural deformation was observed in the field from relatively gently dipping strata to strongly faulted and folded materials. Rock falls, landslides, flows and gullying are common geohazards in the study area, particularly within the ridge and ravine landforms.

The Papuan Fold and Thrust Belt and the eastern Papuan basin from the Central Range to the southern coast, where the study area is located, have moderate levels of seismicity. The geological structures within the study area are considered to have moderate to high risk fault hazards. There are no volcanoes within the study area, with the closest active volcanoes being Crater Mountain and Yelia, which are located 65 km and 85 km away, respectively.

Terrain

In the north section of the study area within PRL-15 and the eastern edge of the onshore export pipeline corridor, the relief is pronounced with homoclinal or hogback/strike and ridge and ravine landforms. The relief is constituted by a succession of ridges and valleys oriented NNW to SSE of the Kuku fault ridge and basins formed by syncline structures of the Nema, Kuku and Goigi Basins (unpublished report, 2014).

Towards the southern part of PRL-15 and along the western edge of the onshore export pipeline corridor the landform becomes flat alluvial plains, with terrain features including oxbow lakes, swamps, discontinuous levees, point bars and scroll complexes. The drainage status across this area varies greatly depending on local conditions, however large areas of this landform are subject to flooding.

Further south along the onshore export pipeline corridor the alluvial landform becomes a complex of beach plains, beach ridges and beaches shaped as long parallel ridges and swales (Löffler et al., 1974). The back beach areas include tidal marshes, estuaries and lagoons.

The study area is drained predominantly by the Purari River system to the north, east and south, as well as the Mena and Era rivers to the west and south. Drainage of the Purari River follows roughly the west-northwest structural grain until it is forced by the Aure Scarp to flow south with a slightly winding channel and few alluvial flats. The river resumes a meandering course, toward the coast, where it splits up into an intricate network of channels which pass gradually into tidal inlets. East of the Purari River mouth, the study area encompasses the littoral (beach) landform which includes the Orokolo Bay area

Soils

The study area is dominated by Entisol and Inceptisol soil orders which are considered poorly formed soils with no to limited soil pedological development. This is due to either erosion in the ridge and ravine areas in PRL-15 and the eastern edge of the onshore export pipeline corridor, preventing soil from developing over the bedrock parent material, or the young age of the soil, as in the depositional profiles of the alluvial plains and beach landforms in the south western parts of PRL-15 and the western edge and southern extremities of the onshore export pipeline corridor. The inundated tidal flats, swamps and saturated alluvial soils are dominated by Histosol soils, which typically form under saturated conditions and have high organic matter in the upper layers.

The soils within the ridge and ravine terrain and mapped as Soil Complex 1, ranged from moderate to well drained, had moderate cation exchange capacity with low nitrogen levels and exhibited stable aggregates. However the frequency and intensity of rainfall, combined with the sloping landform of the ridge and ravine terrain, was observed to have caused high levels of water-induced erosion.

Soils within the alluvial plains landforms and mapped as Soil Complex 2, ranged from moderate to poorly drained, had low to moderate cation exchange capacity, depending on the texture in each layer, low nitrogen levels and exhibited stable aggregates. Evidence of potential acid sulfate soils was observed at sites 22 and 22A near the coast.

The sandy soils of Soil Complex 3 within the beach ridges and beach plains are typically well drained in the upper layers, however frequent waterlogging in the subsoil was observed given the low elevation. The soils often had low cation exchange capacity and very low nitrogen, and if able to form aggregates, these were stable. However the majority of these soils were sandy with no structure.

The inundated soils within permanent swamps and drainage flats were mapped as Soil Complex 4. These soils were not sampled, however due to the virtual permanent waterlogging status of these soils they were defined as Histosols and Hydraquents.

The land capability of the study area is categorized as Class VIII in the ridge and ravine terrain as well as the frequently flooded alluvial plains and beach landforms. This Class VIII land capability is essentially unsuitable for broad scale agriculture or grazing. Only areas within Soil Complex 2, which were the better drained areas of the alluvial plains, exhibited the possibility of some grazing and tree crops with areas of Class VI land capability evident. All activities associated with subsistence garden endeavors were observed to rely on high levels of human intervention and inputs such as creating artificial drainage and mounding to provide a suitable growing medium.

Potential acid sulfate soil (PASS) screening tests show that the study area contains several soil complexes which may be prone to releasing sulfuric acid if disturbed and exposed to the atmosphere. The soil complexes at highest risk are soil complex 2, 3 and 4, all of which are located in the lower lying areas which experience frequent inundation. The PASS testing also indicated moderate risk levels of acid generation from within the subsoils of the three sites tested.

Analyses were undertaken of metal concentrations in soil samples to establish background levels for future comparison. The ecological soil screening levels (Eco-SSLs) and the human health based screening levels (NEPM 2013) were used as guides to assess the status of current background levels. The majority of samples were well below the NEPM (2013) health based screening levels across all metals, however there was wide variation when compared to the US EPA Eco-SSLs. Most notable results were at sites 23 and 27, inland from the coast in the southern part of the study area, which were relatively high in chromium, selenium, vanadium and zinc. The concentrations of these metals are notably higher than the average concentration of world soils. It is not known if the source of these metals is related to anthropogenic activities or natural conditions.

There is no evidence of hydrocarbon contamination of soil at any of the sampling sites. Levels of total petroleum hydrocarbons (TPHs) and benzene, toluene, ethylbenzene and xylene (BTEX) in all samples were below the limits of reporting and also below ecological screening levels.

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1 INTRODUCTION

1.1 Project Overview

Joint venture partners, Total E&P PNG Limited (TEP PNG) (40.13%), ExxonMobil (37.03% - through SPI (208) Limited (35.48%) and SPI Security Holdings Limited (4.55%)) and Oil Search Limited (22.84 % - though Pac LNG Assets Limited (6.75 %), Pac LNG International Limited (5.10%), Pac Overseas Limited (5%), Pac LNG Holdings Limited (3.49%) and Pac LNG Investments Limited (2.50%)) are planning the development of the Elk-Antelope gas fields located in Gulf Province, Papua New Guinea. The gas fields are located within Petroleum Retention License 15 (PRL-15). The Project will include infrastructure development inside PRL-15, and the construction of gas and condensate pipelines (export pipeline) to an LNG Plant site at Caution Bay, 20 km northwest of Port Moresby.

The Project area comprises the physical footprint of the various Project components and associated infrastructure as shown in **Figure 1** and detailed below:

- Production, processing and related facilities (within PRL-15):
    - Wellpads and the associated gathering system (including flowlines and trunk line);
    - CPF;
    - Logistics base and river offloading facilities, accommodation camps, airstrip, roads and bridges;
    - Quarries, communications infrastructure;
    - Initial section of the onshore export pipeline.
- Onshore pipeline (outside PRL-15):
    - Remainder of the onshore export pipeline to landfall on the Gulf coast including valve stations;
    - Temporary laydown areas and camps;
    - Quarries, communications infrastructure.
- Transport (river) corridors:
    - River transport routes— the Purari, Urika-Ivo and Wame-Varoi rivers.
- Offshore pipeline:
    - Offshore section of the export pipeline to a LNG Plant site, Caution Bay.

This report characterizes the baseline geology, terrain and soils environment in the upstream Project study area.

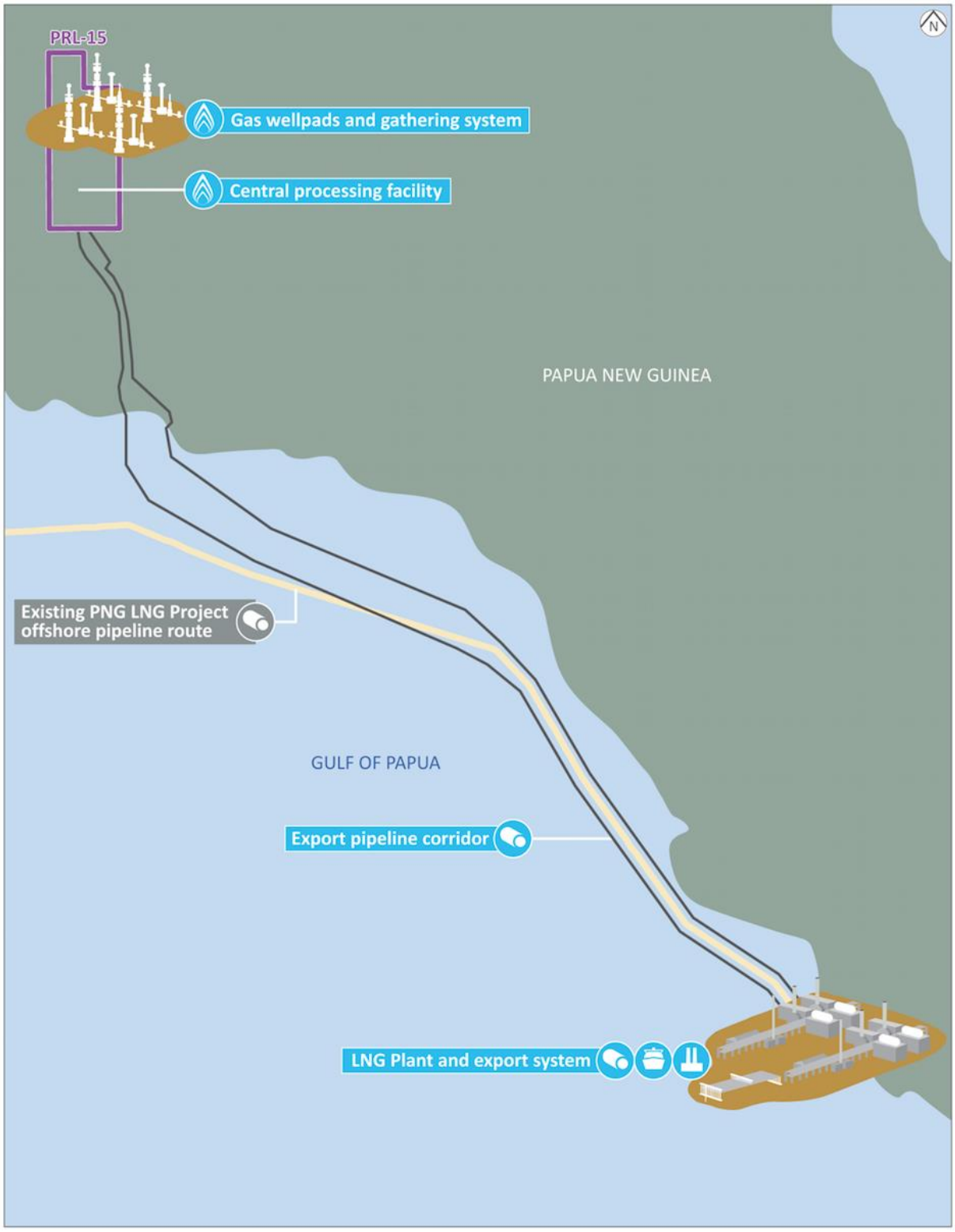


Figure 1 Project Schematic

1.2 Study and Objectives

For the purpose of the environmental impact statement (EIS)/ environmental, social and health impact assessment (ESHIA), a baseline earth sciences study is required to assess the nature of geology, terrain and soils within the upstream Project area.

The overall objective of this study is to provide an integrated geology, terrain and soils assessment for the upstream area of the Project. The specific objectives of the assessment are to:

- Characterize geology of the Project area.
- Describe the terrain of the Project area.
- Describe, classify and map soils within the Project area.
- Characterize the different soils units in terms of land capability, where agricultural (e.g. community garden and plantation) activities may be impacted by the Project.
- Analyze the various soil units within the study area to identify inherent /natural features that may be difficult or problematic to manage when disturbed (highly erodible/dispersive, potential acid sulfate soils) and/or difficult to rehabilitate.
- Support the assessment of Project-related impacts on soil productivity and natural resource uses (ecosystem services) that are dependent on the retention of productive soils, which may potentially be lost from disturbed areas to downslope depositional areas (i.e., colluvium) or to the natural drainage through rainfall-based erosion and scour and overland sediment transport.

2 REGULATORY FRAMEWORK AND STANDARDS

The Project is regulated under Papua New Guinea legislation, however in addition to this TEP PNG will apply international and company standards and guidance to the Papua LNG EIS/ESHIA process.

2.1 Papua New Guinean Authorities and Legislation

In February 2014, the PNG Parliament passed an Act to set up a new Conservation and Environment Protection Authority (CEPA). CEPA has replaced the Department of Environment and Conservation (DEC) as the government agency responsible for administering the Environment Act 2000.

The Environment Act 2000 is the primary legislation in PNG which regulates the environmental impact of development activities and how adverse effects of such activities should be avoided, remedied or mitigated. The Environment Act caters for the sustainable management of the biological and physical components of the land, air and water resources of the country.

The following acts, regulations and guidelines are considered relevant to the geology, terrain and soils aspect of the EIS/ESHIA:

- *Environment Act, 2000*, including regulations and operational procedures/information guidelines;

  The Project is classified as a “Prescribed Activity” under the definitions of Environment (Prescribed Activities) Regulation, 2002 (Level 3 Activity – Sub-category 18 – Petroleum and gas production and processing). The Environment Act, 2000 stipulates that an EIS must be prepared for all Level 3 Activities in order to assess and understand the potential environmental impacts of the activity.

  The Act is to provide for and give effect to the National Goals and Directive Principles of PNG and in particular –

  (a) to provide for protection of the environment in accordance with the Fourth National Goal and Directive Principle (National Resources and Environment) of the Constitution; and

  (b) to regulate the environment impacts of development activities in order to promote sustainable development of the environment and the economic, social and physical well-being of people by safeguarding the life-supporting capacity of air, water, soil and ecosystems for present and future generations and avoiding, remedying and mitigating any adverse effects of activities on the environment; and

  (c) to provide for the protection of the environment from environmental harm;

  (d) to provide for the management of national water resources and the responsibility for their management;

  The geology, terrain and soil study provides suitable baseline data upon which the Project impact assessment can be undertaken, under the provisions of this Act.

- *Environment (Prescribed Activities) Regulation, 2002*;

  The Project is classified as a “Prescribed Activity” under the definitions of Environment (Prescribed Activities) Regulation, 2002 (Level 3 Activity – Sub-category 18 – Petroleum and gas production and processing). The Environment Act, 2000 stipulates that an EIS must be prepared for all Level 3 Activities in order to assess and understand the potential environmental impacts of the activity.

- Guideline for Conduct of Environmental Impact Assessment & Preparation of Environmental Impact Statement, DEC Publication: GL-Env/02/2004;

  Detail regarding the specific requirements of the EIS is provided within this Guideline, which includes the requirement to characterize the receiving environment, including but not limited to geomorphology, topography and geology.

- *Oil and Gas Act, 1998*;

  Petroleum project licenses (including: Petroleum Development Licenses (PDL); Pipeline Licenses (PL); and Petroleum Processing Facility Licenses (PPFL)) issued under the *Oil and Gas Act, 1998* must have considered environmental aspects and applied appropriate management actions. An EIS prepared as required by the *Environment Act, 2000* is typically the means by which this requirement is satisfied.

2.2 International Standards and Guidelines

The following international standards and guidelines are relevant to the geology, terrain and soils aspects of the EIS/ESHIA:

International Finance Corporation

- International Finance Corporation (IFC) Performance Standards as described in the Guidance Notes (2012):
  - 2012 Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;

  The relevant objective of Performance Standard 1 to this study is *to identify and evaluate environmental and social risks and impacts of the project*. This ESBS report provides baseline data on geology, terrain and soils from which the risks and impacts associated with the Project may be assessed.

  - 2012 Performance Standard 3: Resource Efficiency and Pollution Prevention;

  The relevant objective of Performance Standard 3 to this study is *to avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.* This ESBS report provides baseline data on geology, terrain and soils which can support Project design and planning with the aim to avoid and minimize pollution of these aspects from Project activities.

  - 2012 Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

  The three objectives of Performance Standard 6 relevant to this study are:

    - To protect and conserve biodiversity.
    - To maintain the benefits from ecosystem services.
    - To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.

  Understanding the geology, terrain and soils of the study area is fundamental to understanding biodiversity within the area and the maintenance of the biodiversity.

- The International Finance Corporation and World Bank Environmental, Health and Safety Guidelines for Onshore Oil and Gas Development. This document provides a summary of environmental, health and safety impacts associated with onshore oil and gas development, along with recommendations for their management. Of particular relevance to the geology, terrain and soils study is the terrestrial impacts and Project footprint risks, impacts and management strategies.

Soil Taxonomy

- United States Department of Agriculture (USDA): Keys to Soil Taxonomy Twelfth Edition (2014). This system of soil nomenclature has been used in lieu of a national PNG scheme. Previous land resources studies undertaken in Papua New Guinea have utilized the USDA system, albeit earlier versions.

Acid Sulfate Soil Assessment

- There are no Papua New Guinean guidelines on acid sulfate soils investigation, assessment and management. The requirements of the Australian Queensland Government's State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils (SPP2/02) have therefore mostly been used for guidance. SPP2/02 has attendant guidelines published by the Queensland Acid Sulfate Soils Investigation Team (QASSIT), these being:
    - Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland (QASSIT, 1998).
    - Acid Sulfate Soils Laboratory Methods Guidelines (QASSIT, 2003).
    - Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines (QASSIT, 2014).

  SPP 2/02 and its attendant guidelines represent best practice within Australia and have been developed for use in tropical littoral environments such as those that occur in Papua New Guinea.

Soil Contamination Assessment

- The Australian National Environment Protection Council (NEPC) has developed measures to assess land and groundwater contamination, as described in Schedule B1 Guideline on Investigation Levels for Soil and Groundwater (NEPM, 2013). Whilst this document has been developed for use in Australia, it provides contamination assessment levels which can be applied to other nations such as Papua New Guinea.
- The US Environmental Protection Agency (EPA) has developed Ecological Soil Screening Levels (Eco-SSLs) for most metal contaminants. Separate Eco-SSLs have been calculated for contaminants and their impact to plants, soil invertebrates, avian wildlife and mammalian wildlife.

2.3 TOTAL Company Standards and Commitments

The following TOTAL standards and commitments were used to guide the geology, terrain and soils assessment:

- Total general specification GS EP ENV 111: Environmental Baseline and Monitoring Studies: Onshore Sites.

  Section 8.4 of the above general specification outlines guidance on sampling locations and methods, as well as in situ analysis and observations, as per below.

  Sampling Locations

  The soil sampling pattern may be random, or regularly plotted (square grid or transects) according to the project features. It shall be established, before starting the field survey, considering the following requirements:

  - *In the case of an oil or gas plant project, the sampling stations shall be positioned as follows: a reference sample shall be taken in a virgin area where no industrial facilities are present (background level). This position shall be located up stream and up wind of the planned site. It shall act as a reference monitoring point for scheduled operations.*
  - *Sampling points shall be located on future, or close to existing, vulnerable points, such as storage tanks, water treatment stations, oil water separator, water or effluent basin, discharge zone, unloading area etc.*
  - *Alluvial sediments shall be sampled in streams and rivers if any, upstream and downstream of the planned site.*

- *In case of a pipeline route (or other linear structure) the sampling points shall be located regularly (e.g. every 20 km, depending on the total length), and in zones representative of each type of landscape (valley, river crossing, foothill, plateau, plain, mountain, agricultural areas). All geotechnical information and reports shall be also considered.*
- *In other cases, the sampling pattern may be random, or regularly plotted (regular square grid, or transects) according to the project features.*

In case of heterogeneous sites, it is recommended to distribute the number of sampling points in proportion to the surface area of the each zone type.

To improve geostatistical treatment for comparison in the future, sampling should be as exhaustive and regular as possible for consistency, validity and representativeness (case of an existing industrially contaminated site).

Sampling Methods

Soil samples shall be taken from the surface, after quick stripping of the top soil. Indicative sampling depth is around 10 to 20 cm. Each sample shall be made by homogenization of 3 to 4 samples taken in an area of several square meters.

In case of deeper sampling (one meter), a manual auger or manual corer should be used. A geological log should be recorded (lithology, texture, organoleptic indices, etc.).

Depending on the context (pollution characterization horizontal and vertical extension), a mechanical excavator or core-drilling equipment can be used to investigate greater depths (down to 4 meters). Particular care shall be taken not to impact underground facilities. Excavations shall be carefully refilled after investigation. This method shall not generate visual impact in the environment and landscape. At least one sample per 1 meter depth should be taken (to be adapted in case of lithological changes).

In situ analysis and observations

In case of soil with mixed granulometry, the fine fraction shall be sampled (big blocks being avoided). Full samples shall be taken for further granulometric determination.

Each sample shall be labelled and numbered. A photo shall be taken for each sample.

The following minimum information shall be gathered and recorded: sample coordinates, sampling depth, sampling technique, general aspect, lithology, texture, calcification, hardness, Redox potential, packing, and photo.

The use of analytical field kits, as portable photoionization detector (PID), shall be submitted to Company for approval. They can be used for preliminary screening or as complementary means, and their results shall be checked by approved laboratory analysis (methodology to be specified).

Section 9.1.1 of the above general specification lists specific soil analysis to be undertaken on collected samples as shown in **Table 1** below.

Table 1 Total General Specification GS EP ENV 111 Soil Testing

Chemical analysis	Method (indicative)
Total Organic Matter (TOM)	H_2O_2 or fire loss (550°C)
Total Organic Carbon (TOC)	Sulfonic Oxydation or combustion after carbonates elimination
Total nitrogen	Spectrophotometry (630 nm)
Total phosphorus	Spectrophotometry (720 ou 880 nm)
Water content	Drying up
Heavy metals : • Ba, Cd, Cu, Pb, Zn, Fe, Co, Ni, V, Cr, Sr, Al* • Hg	On the fine fraction < 63 µm and control on totality: • Spectro with AA • Hg: Atomic fluorescence
Total Petroleum Hydrocarbons (TPH)	Spectrophotometry Infra Red
Mono Aromatic Hydrocarbons (BTEX) (if TPH > detection limit)	Gas chromatography
Polycyclic Aromatic Hydrocarbon (PAH) (if TPH > detection limit)	Chromatography Gas phase and Mass Spectrometry (GC-MS)
Aliphatic hydrocarbons (if TPH > detection limit)	Gas chromatography

3 STUDY AREA

3.1 Study Area

The study area is shown in **Figure 2** and includes the areas surrounding the upstream components of the Project. The areas assessed include:

- PRL-15, including:
    - Wellpads and upstream gathering system.
    - CPF and supporting infrastructure.
    - Initial section of the onshore export pipeline corridor.
- Export gas and condensate pipeline corridor outside PRL-15, comprising separate single gas and condensate export pipelines along the same route. This study is restricted to the upstream pipeline section between PRL-15 and the coast (onshore export pipeline corridor).

To provide regional context, description is also undertaken of wider zones surrounding the study area.

The Project area of influence relevant to geology, terrain and soils, is restricted to within close vicinity of areas of direct disturbance from Project developments.

3.2 Climate

Papua New Guinea has a tropical climate. The coastal and islands regions tend to be hot and humid, with temperature averages in the range 20°C to 32°C and relative humidity in the range levels ranging from 70% to 90%. Temperature is altitude dependent, with hot and humid conditions toward the coast and cooler conditions in the higher areas in the north of PRL-15.

The seasons (and rainfall patterns) in Papua New Guinea are generally dictated by the southeast trade winds that occur from May to October (dry season) and northwest monsoons winds that occur from December to March (wet season). April and November are doldrum periods between these seasons. However there is reverse seasonality in the Purari River area near PRL-15 with more rain between June and September and drier, hot weather between October and March (Evesson, 1983). In upland areas, cloud and fog are an important source of moisture for most of the year, with areas subject to the most cloud receiving the most rain. The area is one of the cloudiest and wettest places in the world with rainfall in the Wabo area being more than 8,000 mm per year (Evesson, 1983). Toward the coast, rainfall is lower and more evenly spread throughout the year (averaging around 300 mm/month) (Evesson, 1983).

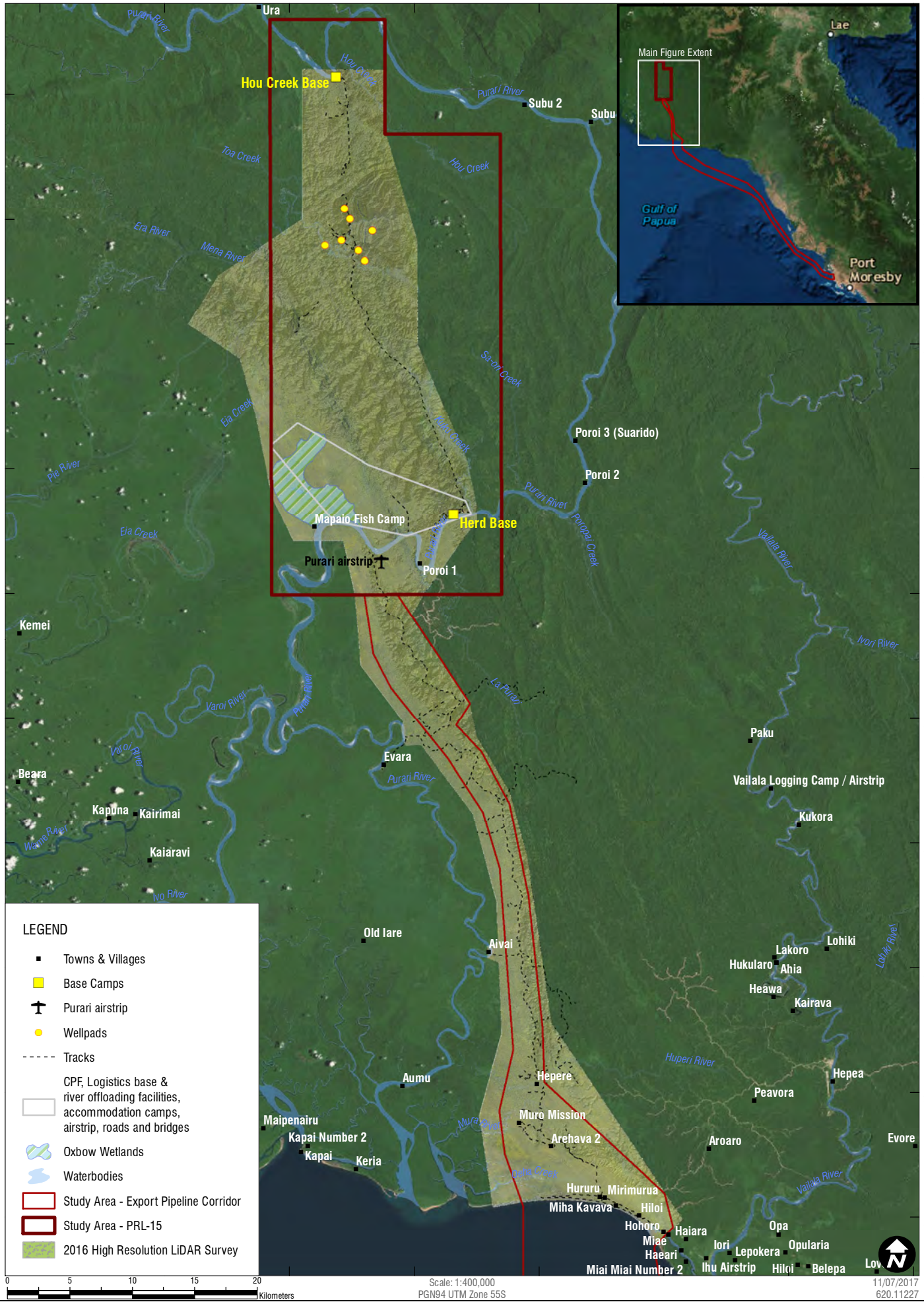
Papua New Guinea's climate varies considerably from year to year due to the El Niño-Southern Oscillation (ENSO). This is a natural climate pattern that affects weather across the world. El Niño is a warming of the Pacific Ocean resulting in longer and cooler dry seasons (i.e., periods of drought), and a delay to the start of monsoon season. La Niña, the cold phase of ENSO, typically results in higher than average rainfall and warmer temperatures during the wet season, often leading to flooding events and landslides (PACCSAPP, 2015). Papua New Guinea also experiences neutral ENSO phases.

3.3 Anthropogenic Setting

PRL-15 is largely unsettled but owned and used by the Pawaian people, who reside in villages along the Purari River. Most of these villages are outside of but near to PRL-15 except for two small villages (Poroi 1 and Mapaio Fish Camp) that are located on the Purari River within the southern part of the license area. Aside from subsistence livelihood activities from the Pawaian people, the main anthropogenic activities in PRL-15 relate to the recent and ongoing gas exploration activities, including the main operations camp at Herd Base, temporary camps at Antelope-3 Operations Camp (recently recommissioned) and Hou Creek Base (now demobilized), and activities and disturbances relating to well pads, access roads, and helipads.

The inland section of the export pipeline corridor south of PRL-15 is largely unpopulated however has been modified by large-scale industrial logging. Near to and along the coast, the number and size of villages, and hence population density, increases. Anthropogenic activities include clearing of forest for settlements, subsistence agriculture (food gardens, sago planting, hunting and fishing) and historical clearing for coconut plantations.

Along the Purari river ways, villages are predominately located on or in the vicinity of the upper reaches of the tidal influence where there is likely to be a greater availability of resources. Logging and Project-commissioned barges transporting supplies and equipment to the base, regularly travel along the Purari River channels.



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Study Area

FIGURE 2

4 EXISTING INFORMATION

4.1 Prior Studies within the Study Area

4.1.1 Lands of the Kerema – Vailala Area, Territory of Papua and New Guinea (CSIRO 1969)

This report and associated maps were used as a basis of understanding the division of land systems, geomorphology and soils. Whilst there is no available data on the 250 sites actually observed, the CSIRO (1969) mapping reflects the interpretation of these sites and has been built on over the years with updated technology and mapping tools. The USDA soil classification system at the time of publishing this report was Edition 6, which is significantly different in some nomenclature of soil units, however the general understanding of these soils remains consistent.

4.1.2 Papua New Guinea Resource Information System (PNGRIS)

The PNG National Agricultural Research Institute (NARI) was established by an Act of National Parliament in July 1996 as a public funded, statutory research organization, to conduct and foster applied and adaptive research into matters associated with agriculture and its development in Papua New Guinea. NARI administers the Papua New Guinea Resource Information System (PNGRIS) which is a mapping and information database that contains Resource Mapping Units (RMUs) which are linked to information on natural resources (physical features, soils, climate, forests, and vegetation), land use and small holder socio economic activity (Bryan and Shearman 2008). In PNGRIS, soils information appears to have been sourced from the CSIRO (1969) mapping and further classified into mapping units that are defined by attributes other than soils (landform, rock type, altitude, relief, rainfall, inundation, province). This means that more than one soil can occur in a resource management unit (RMU). PNGRIS deals with this by allowing each RMU to have up to three soils. Soils that cover less than 20% of an RMU are not listed. Only one soil is listed if it covers around 80% or more of the RMU area. If two soils are listed, the first covers 40%–60% of the RMU and the second 20%–40%. If three soils are listed, the first covers 30%–50% of the RMU area and the second and third 20%–40% (Bourke and Harwood 2009). However, it is understood that no additional soil profile data has been obtained for the PNGRIS mapping since the 1969 CSIRO study. Therefore the more detailed mapping of the PNGRIS appears to be based on other attributes measureable through remote sensing, and not solely the data from CSIRO (1969). This mapping is presented and described in detail in the Papua LNG Project Groundwater and Geology, Terrain & Soils Baseline – Scope and Methods report (ERIAS, 2017).

4.1.3 Geological Resources

There has been comprehensive investigation of the geology within the study area for the purpose of hydrocarbon exploration. These investigations have largely focused on the deep carbonate geology of the Kapau Limestone in which the target gas reservoir lies. The overlying mudstones, marls and shales of the Orubadi Formation act as the capping material to the hydrocarbon resource.

The geological information regarding the shallower (<1,000 m bgl) surface geology is based on limited assessment localities and therefore the descriptions are considered regional. These give a basic appreciation of the likely geologies associated with certain landforms.

Useful resources include:

- The Purari – Tropical Environment of a High Rainfall River Basin (Petr, 1983);
- Elk/Antelope Gas Field PPL 238, Papua New Guinea Resource Assessment (unpublished report, 2009); and
- The Geology of the Kikori 1:250,000 Sheet Area PNG, Record - Bureau of Mineral Resources Geology and Geophysics (Pieters, 1980).

A basic stratigraphy for the study area compiled using information from Pieters (1980) and GHD (2015d) is included below in Table 2.

Table 2 Basic Stratigraphy in the Study Area

Age	Name and Thickness	Description
Holocene	Quaternary Sediments <100 m	Variable depending on parent geology and location in study area. Accumulations within river valleys and creek lines. Unconsolidated coarse sands and gravels in upper catchments with fine black to dark grey sands and silts in the Purari River basin.
Pliocene to Pleistocene	Era Beds <2,000 m	Sandstone, siltstone and mudstone with rare coal and conglomerate. Commonly carbonaceous. Blue to grey and brown when weathered.
Uppermost Miocene to Pliocene	Orubadi Beds <2,400 m	Mudstone, siltstone, sandstone, minor conglomerate and rare calcarenite and limestone breccia. Blues to grey and brown in more calcareous areas. Fine to medium bedded and occasionally massive.
Upper Oligocene to lower Miocene	Kapau Limestone >1,000 m	Cream to light brown; mainly thin bedded but occasionally massive limestone. Fossiliferous in places including fragments of corals, bivalves and gastropods. Reservoir rock, target of the gas exploration.

Source: Compiled from Pieters, 1980 and GHD, 2015d

4.1.4 The Purari – Tropical Environment of a High Rainfall River Basin (Petr, 1983)

This report from 1983 provides information and mapping of the physical-chemical environment of the entire Purari River catchment. Whilst the study area is located within a small southern area of this catchment, the information was used to provide background to the geology, terrain and soils study.

The report outlines the central features of Papua New Guinea's geology and geomorphology. Foremost of these is the recent geological origin of much of the island, with late Tertiary marine sediments now considerably uplifted and deformed, and intense erosion that has taken place since uplift with the transportation of sediments to the Purari River floodplains. The Tertiary sediments map unit provided in the Petr (1983) report, over which the majority of PRL-15 and the onshore export pipeline corridor are located, includes all tertiary non-limestone sedimentary rocks. The Orubadi Beds are the major formation in the study area and are conformable on the Darai Limestone.

The terrain of the majority of the study area is described in Petr (1983) as 'Ridge and V-valley' forms, with strong structural control. The Ridge and V-valley directions are controlled by the strike of the underlying rock, with the slope angles controlled by the dip of the rock. They thus consist of a series of dip and scarp slopes forming cuestas and hogbacks.

The Petr (1983) report describes two types of soils within the study area, namely *'upland brown soils'* located in hillslope, ridge and ravine terrain of PRL-15 and the eastern side of the onshore export pipeline corridor, and *'Poorly drained alluvial soils'* along the alluvial and littoral plains. The report generally describes these two soil types as follows:

- Upland brown soils: These soils are of variable depth depending on slope steepness and stability. Brown Regosols occur on unstable slopes, whilst brown forest soils and brown podzolic soils occur on more stable areas. Where topsoil is present, it is well-developed dark brown and friable and overlies brown to yellowish brown heavier clay subsoils. Chemical characteristics are variable, but these soils are usually acidic, high in organic matter in the topsoil with a low content of bases.
- Poorly drained alluvial soils: Fine textured soils predominate, which are peaty in the permanent swamps and strongly gleyed due to poor drainage. The water table is always close to the surface and during wet periods, many of the soils are subject to inundation.

4.1.5 InterOil SPI (208) Ltd, Antelope South-1, 4, 5 and 6 EIA and EMPs

The geology, terrain and soils for these four exploration wellpad sites (Antelope South-1 and Antelope 4, 5 and 6) are briefly described in these documents (GHD, 2105a, 2015b, 2015c and 2015d). The four sites are located in PRL-15 and can be considered representative of the physical landscape of the area. The below summary describes the range and nature of the geology, terrain and soils described in these reports.

The sites are typically located on Orubadi bed series geology, being predominantly mudstone, siltstone, minor sandstone, rare conglomerate and calcarenite; they are generally carbonaceous, and calcareous in places. Exposed rock, primarily mudstones and siltstones, occur along the river banks and tributaries of the area. The terrain of the local region varies from mildly to strongly undulating, with some areas of sharp uplift present in the gas field areas.

The soils derived from dystropepts are typically dark clay/silt muds with some calcareous material associated with the original marine deposits of the area. These are the most frequently encountered soil types in the region, and generally comprise poorly differentiated soils derived from ancient marine deposition and exposed through geologically recent uplift.

Kuku Creek is the most significant tributary of the Purari River in the area of the gas field. Accumulated sediments on its terraces are comprised of a sandy/clay alluvium. There are small areas of exposed mudstone, minor conglomerates and siltstones in the upper reaches of Kuku Creek, but the lower sections of the creek are dominated by fine silt alluvium. These soils are vulnerable to erosion, but are continually naturally eroded and replenished by river flows.

Along Mena River below Antelope-4, and Boa Creek below Antelope-5 and Antelope-6, accumulated sediments on the terraces of these tributaries of the Era River also comprise a sandy/clay alluvium interspersed with small areas of exposed mudstone, minor conglomerates and siltstones. On a finer scale these soils occur as minor units along the major creeks/rivers in the region. These soils are vulnerable to erosion, but are continually naturally eroded and replenished by river flows.

4.2 Studies in Neighboring Regions

The PNG LNG Project EIS (Coffey Natural Systems, 2009) describes existing conditions of the Kikori-Omati deltas and inland to Hides. This area is west of the Papua LNG Project study area. This document was used as part of the bibliographic review to obtain an understanding of geology and soils within the region. The key relevant components of this document are listed below:

- Environmental Impact Statement – Part 2 Existing Environment – Chapter 10 Physical Environment.
- Environmental Impact Statement – Supporting Studies: Upstream and Onshore Pipeline – Appendix 8 Soil Impact Assessment and Rehabilitation Study: Juha to Hides.

4.3 Summary

The review of existing information outlined above shows that there is some baseline geology, terrain and soils mapping from the 1960s with additions made with the improvement of remote sensing techniques, however there is a distinct lack of soil profile information within the study area. A field survey was therefore undertaken to collect soil profile data to ground-truth the baseline mapping and provide real data on soil types and characteristics. The existing information on geology and terrain, described above and detailed in **Section 6**, combined with surface observations and assessment from the geology and terrain components of the field survey has been utilized to describe the study area.

5 METHODS

5.1 General Approach

A 'Baseline – Scope and Methods' document was prepared for 'Groundwater and Geology, Terrain & Soils', which contains details of the approach taken for this study (ERIAS Group, 2017). The below information is a summary of this approach, which included a bibliographic review and preliminary risk assessment, supplemented by field surveys to fill identified data gaps.

5.1.1 Preliminary Risk Assessment

To identify a suitable study approach for the assessment, including a soil sampling program, a high level, preliminary risk assessment of the Project area was undertaken by SLR based on likely landform and soil disturbance including potential impacts from erosion and sedimentation, acid sulfate soils and potential soil related problems for rehabilitation. The risk assessment identified significant soil disturbance and excavation activities upon steep slopes at the well pads and sections of the pipeline route to be high risk areas in regard to soil erosion, management of soils and rehabilitation challenges. Construction activities undertaken on relatively flat terrain was considered low risk with the exception of potential acid sulfate soil occurrence in coastal lowland areas which was considered to present medium to high risk due to the potential release of acid leachate from disturbed soils to the environment and consequent impacts on aquatic biodiversity and ecosystem services. The terrain and soil survey sites reflect this risk assessment in regard to sampling site location and density.

5.1.2 Conceptual Site Model

The results of the bibliographic review yielded base maps as sourced from CSIRO (1969) and PNGRIS of USDA soil taxonomy units. These soil units have been produced using various soil survey studies and remote sensing techniques detailing topography, geology and vegetation maps. This base soil unit map formed the foundation of the ground-truthing and sampling program undertaken.

5.1.3 Gap Analysis

The preliminary conceptual site model for soils is limited to mapping undertaken at a scale of 1:500,000. Mapping at this scale is inadequate to predict soils that may be encountered and their characteristics and management requirements for the proposed construction activities. There is no evidence of the location of soil profile investigations undertaken in the production of this mapping and therefore no evidence of on ground assessment of soil profiles within the study area.

The soil survey was undertaken to provide ground soil profile information to confirm/modify the base mapping provided by CSIRO (1969) and PNGRIS.

5.1.4 Fieldwork Survey Timing

The seasons in Papua New Guinea (and rainfall patterns) are generally defined by the southeast trade winds that occur from May to October (dry season) and northwest monsoons winds that occur from December to March (wet season). April and November are doldrum periods in between these seasons. However, in the Purari River area near PRL-15, there is reverse seasonality, with more rain from June to September and drier, hot weather from October to March.

The fieldwork component of the geology, terrain and soil survey for the upstream Project area was undertaken on November 15th to 21st 2016, consisting of sites within PRL-15 and the onshore export pipeline corridor. The timing for the upstream field survey was scheduled to exploit typically dry conditions likely to provide a higher chance of access to the investigation sites during this period.

5.2 Data Sources

In addition to field work undertaken in November 2016, the geology, terrain and soils baseline study also comprised a desktop assessment using resources summarized in **Section 4** above and a base map using the following key data sources:

- Lands of the Kerema – Vailala Area, Territory of Papua and New Guinea. Land Research Series No. 23 (CSIRO, 1969). The report and associated maps including geology, geomorphology, land systems and great soil groups.
- Papua New Guinea Resource Information System (PNGRIS). Resource mapping units and soil types mapping overlayed in Google Earth (PNG NARI, 2015).
- 2014 desktop geology study of Elk Antelope Block PRL-15 (unpublished report, 2014).

5.3 Field Surveys

The field survey comprised investigation of 27 sites located in and around the proposed upstream components of the Project including the wellpad areas, CPF and associated infrastructure, and the export pipeline corridor. Several ground-truthing assessments were undertaken at these sites including:

- Localized geology and geomorphology landscape assessment;
- A terrain and landform assessment;
- Soil profile excavation and assessment of soil type and characteristics; and
- Collection of soil samples from nominated sites for analytical testing.

5.3.1 Field Survey Personnel and Equipment

General observations of the terrain within the study area were made during the daily helicopter flights to and from sites. Photos were taken of the landforms and terrain and are included in this report to aid appreciation of the physical landscape.

The geology ground-truthing and soil profile inspection sites were inspected via excavation (using hand tools) to a depth of approximately 1.0 m. Assessment, measurement and sampling was undertaken at the majority of these 'detailed inspection' sites (see **Section 5.3.2**). Following completion of the field program, samples from specific sites were chosen for laboratory analysis.

Sampling depths were reasonably consistent across the majority of sites. The 0–10 cm depth samples were a bulked homogenous sample, however lower samples were from a single source from within the exposed soil profile.

The assessment of acid sulfate soils (ASS) involved observations and preliminary field investigation. The presence of potential ASS (PASS) was suspected at sites 9, 22 and 22A and samples from these sites were submitted for further laboratory testing for confirmation of PASS status. The purpose of this assessment is to provide preliminary evidence to identify risk areas and allow impact assessment and development of management measures to be undertaken for the purpose of the EIS.

Hand tools utilized for excavation to the B horizon included shovels, crowbars and trowels. The soil exposure was made in order to present the soil profile to enable photography, sampling and description of the various soil horizons in situ.

The information recorded at each 'detailed inspection' site consisted of the following:

- Site information:
    - Site identification number
    - Date
    - Project location
    - Assessors
    - Nature of exposure
    - GPS coordinates
- Location characteristics:
    - Geology unit or lithology
    - Landform pattern and element
    - Aspect
    - Slope characteristics
    - Current land use
    - General vegetation
- Soil profile properties:
    - Soil type field name
    - Horizon and boundary information
    - Texture and pedality grades
    - Fragments and segregations
    - Consistence (hardness)
    - Color and field pH (of suspected potential acid sulfate soils (PASS))
    - Mottles and drainage characteristics
- Samples taken and depths
- Sample technique (bulked or non-bulked)
- Comments

In addition to the above information, photographs of the rock outcrop, soil profile, landscape, and vegetation were taken.

5.3.2 Survey Sites

The geology, terrain and soils survey team visited a total of 27 sites throughout the upstream study area. The focus of the investigations was on areas of existing or potential disturbance, where factors such as erosion potential, contamination, structural failure, rehabilitation risks and acid sulfate soils may be important. A summary description of sampling sites, including site coordinates and data collected, is provided in **Table 3**. The location of these sites is shown in **Section 6** (see **Figure 12**). 'Detailed' sites were the locations at which a detailed field assessment and sampling was undertaken as per **Section 5.3.1** above. 'Observation' sites were those at which field information was obtained including photos, and field notes however detailed recordings were not warranted and no sampling was undertaken. Observation sites were used to assist in mapping soil units matching those identified using detailed sites.

Table 3 Sampling Site Details

Site	Area	Latitude	Longitude	Survey Type
1	ETL-1	-7.34869	145.18997	Detailed
2	CPF Creek Line	-7.33559	145.21872	Detailed
3	CPF Cleared Area	-7.35113	145.19216	Detailed
4	ANT-5	-7.15724	145.13493	Detailed
5	ANT-3	-7.14032	145.14095	Detailed
6	Fly Camp E	-7.64972	145.26226	Detailed
7	Fly Camp B	-7.50458	145.21363	Detailed
8	Fly Camp D	-7.31336	145.13815	Detailed
9	ETL-2	-7.27525	145.19418	Detailed
10	Elk-2	-7.05908	145.13529	Detailed
11	Between Elk-2 & Elk-3	-7.06584	145.14067	Observation
12	Elk-3	-7.06918	145.12993	Detailed
13	Elk-4	-7.11088	145.13849	Detailed
14	ANT-6	-7.14898	145.15753	Detailed
15	Herd Base	-7.35595	145.22398	Detailed
16	Harevavo	-7.85191	145.28582	Observation
17	Harevavo	-7.85165	145.29578	Detailed
18	Mareke	-7.85520	145.31617	Detailed
19	Kavava	-7.85466	145.32849	Detailed
20	Oru	-7.86282	145.34412	Observation
21	Herakela	-7.86850	145.35186	Observation
22 & 22A	Fly Camp F	-7.78997	145.26257	Detailed
23	T1	-7.79996	145.27930	Detailed
24	Arehava	-7.81715	145.28836	Observation
25	Arehava	-7.81712	145.28837	Observation
26	T2	-7.82366	145.29970	Detailed
27	Paevera	-7.82926	145.31654	Observation

Notes: Co-ordinates in WGS84

5.4 Protocols Used

5.4.1 Geology Classification Systems

The rock classification systems that were utilized for the study are as described in the AusIMM Field Geologists Manual. Classifications of the rocks were conducted in the field and are purely from hand specimen samples and not further quantified by thin section or other investigative methods. These rock classification systems are commonly used in Papua New Guinea and Australia. The PNGRIS mapping covering the study area also classifies rock types using similar systems, hence there is consistency across mapping and reports. The landforms and substrate characteristics were also classified and catalogued as per the Australian Soil and Land Survey Field Handbook (CSIRO, 2012).

5.4.2 Field Assessment Techniques

The field classification for geomorphology and landform features was based on the CSIRO (2012) Australian Soil and Land Survey Field Handbook, 3rd Edition, also referred to as the 'yellow book'. The parameters recorded and measured during the field assessment are described in **Table 4**. This includes parameters for which in situ measurements were undertaken in the field and parameters analyzed on soil samples submitted for laboratory testing.

Table 4 Parameters Measured during Geology, Terrain and Soils Field Studies

Dataset	Description of Parameter	Justification
Surface geology	Physical evidence and observations of rock types that occur at each of the investigated sites were recorded	The recording of available rock types located at the investigation sites facilitates the ground-truthing of geology and geomorphology mapping at a more detailed scale. The identification of rock types also assists in soil taxonomy and mapping.
Geomorphology and landform features	Landform features were recorded at each site in accordance with *Australian Soils and Land Survey Field Handbook* (CSIRO 2012); including: • Landform element • Landform pattern • Aspect • Elevation • Drainage • Erosion presence • Rock outcrop	Geomorphology information provides specific details to allow for areas exhibiting similar or dissimilar landforms to be grouped or separated, for the creation of detailed geomorphology maps, soil landscapes and soils maps
In situ soil physical parameters	Horizon distinctions and depths	Determining factor in soil taxonomy, also indicates weathering characteristics and soil development
	Field color (Munsell Color Chart)	Determining factor in soil taxonomy, also indicates permeability, susceptibility to dispersion/erosion
	Field texture grade	Determining factor in soil taxonomy, also indicates erodibility, hydraulic conductivity, moisture retention and root penetration
	Boundary distinctness and shape	Determining factor in soil taxonomy, also indicates erosional/dispositional status
	Soil pedality grade, ped size and shape	Determining factor in soil taxonomy, in particular soil structure, root penetration, permeability and aeration
	Stones – amount and size	Contributing factor to water holding capacity, weathering status, erosional/depositional character
	Rooting depth	Effective rooting depth, vegetative sustainability
	Slaking test	Preliminary indicator of dispersion and potential for erosion

Dataset	Description of Parameter	Justification
Soil samples for laboratory analysis	Particle-size distribution (<2 mm)	Informs assessment of nutrient retention; exchange properties; erodibility; workability; permeability; sealing; drainage; interpretation of most other physical and chemical properties and soil qualities
	Soil reaction (pH) (1:5 soil:water suspension)	Informs assessment of nutrient availability; nutrient fixation; toxicities (especially Al, Mn); liming; sodicity; correlation with other physical, chemical and biological properties
	Total organic carbon (TOC) Total organic matter (TOM)	Informs assessment of nutrient availability; retention and fixation (especially N, P, S); cation exchange capacity; soil stability and workability; permeability; correlation with other physical, chemical and biological properties
	Cation exchange capacity and exchangeable cations	Informs assessment of nutrient status; calculation of exchangeable sodium percentage (ESP); assessment of other physical and chemical properties, especially dispersivity, shrink – swell, water movement, aeration
	Electrical conductivity (1:5 soil:water suspension)	Appraisal of salinity hazard in soil substrates or groundwater, total soluble salts
	Aggregate stability (Emerson aggregate test)	Susceptibility to surface sealing under rainfall or irrigation; effect of raindrop impact and slaking; permeability; infiltration; aeration; seedling emergence; correlation with other properties
	Total nitrogen	Nutrient status for rehabilitation of agricultural pursuits
	Total phosphorus	Nutrient status for rehabilitation of agricultural pursuits
	Water content	Current status of moisture content
	Heavy metals: Ba, Cd, Cu, Pb, Zn, Fe, Co, Ni, V, Cr, Sr, Al, Hg	Background levels/possible contamination
	Total petroleum hydrocarbons (TPH)	Background levels/possible contamination

5.4.3 Soil Taxonomy Classification

The applicable international technical soil taxonomy standard adopted for the Project is the USDA Keys to Soil Taxonomy Twelfth Edition (USDA, 2014). This standard is routinely used as the soil classification system in Papua New Guinea and has been adopted to assess the soil taxonomic types. Previous mapping (CSIRO (1969) and PNGRIS) covering the study area also classifies soils under the USDA system, albeit earlier versions, which ensures some consistency across mapping and reports.

The USDA soil taxonomy and classification system has increasingly been adopted around the world. It provides a classification of soil types into 12 orders, followed by further classifications such as Suborder, Great group, Subgroup, Family and Series. The twelve ‘orders’ include Alfisols, Andisols, Aridisols, Entisols, Gelisols, Histosols, Inceptisols, Mollisols, Oxisols, Spodosols, Ultisols and Vertisols. Soil profile descriptions from each site are presented in **Appendix A**.

5.4.4 Land Capability

The USDA Land Capability Classification has been adopted for the study. This system consists of eight categories that classify the land based on the severity of long-term limitations. Limitations are the result of the interaction between physical resources and a specific land use. A range of factors, including climate, soils, geology, geomorphology, soil erosion, topography, and the effects of past land uses, are used to assess this interaction. The principal limitation recognized by these capability classifications is the stability of the soil mantle.

The nature of subsistence farming and sourcing food from natural ecosystems means this land capability system should be applied with these activities in mind. The practice of broad scale cropping or grazing agriculture is not applicable to the study area. It is also to be noted that there are large areas of tree crops of sago, coconut and betel nut nearby the villages on the coastal areas that have been successfully established in the existing soils and landforms however the USDA land capability classification system may not necessarily reflect this suitability. A description of the USDA Land Capability Classification System is provided in **Table 5**.

Table 5 USDA Land Capability Classification

Classes	Descriptions
I	Soils in Class I have few limitations that restrict their use
II	Soils in Class II have some limitations that reduce the choice of plants or require moderate conservation practices
III	Soils in Class III have severe limitations that reduce the choice of plants or require special conservation practices, or both
IV	Soils in Class IV have very severe limitations that restrict the choice of plants, require very special management, or both
V	Soils in Class V have little or no erosion hazards but have other limitations, impracticable to remove, that limit their use largely to pasture or range, woodland, or wildlife food and cover
VI	Soils in Class VI have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover
VII	Soils in Class VII have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland or wildlife
VIII	Soils and landforms in Class VIII have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, or water supply, or for aesthetic purposes

5.4.5 Acid Sulfate Soils

There are no Papua New Guinean guidelines for acid sulfate soils investigation, assessment and management. The requirements of the Australian Queensland Government's State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils (SPP2/02) have therefore been used for guidance. SPP2/02 has attendant guidelines published by the Queensland Acid Sulfate Soils Investigation Team (QASSIT), these being:

- Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland (QASSIT, 1998).
- Acid Sulfate Soils Laboratory Methods Guidelines (QASSIT, 2003).
- Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines (QASSIT, 2014).

SPP 2/02 and its attendant guidelines represent best practice within Australia and have been developed for use in tropical littoral environments such as those that occur in Papua New Guinea.

The purpose of the preliminary acid sulfate soils investigation is to allow environmental risks associated with acid sulfate soils to be evaluated and management measures developed as required to mitigate potential impacts arising from the disturbance of such soils.

Two main terms are used when identifying acid sulfate soils:

- Potential acid sulfate soils (PASS).
- Actual acid sulfate soils (AASS).

Potential acid sulfate soils are soils containing iron sulfides (commonly pyrite), which have the potential to produce sulfuric acid if they are drained or excavated. Actual acid sulfate soils have already undergone oxidation to produce acid, resulting in a soil pH of less than 4. They also often exhibit yellow and/or red mottling in the soil profile. If these soils still contain sulfides, they have the potential to produce more acid.

Field observations of suspected undisturbed acid sulfate soils were made based on the following physical attributes. Undisturbed acid sulfate soils are always wet, usually entirely saturated, and are slippery to walk on. Their anaerobic state gives them a steely blue-grey color (or 'gley'), which can range from pale to dark shades. Marine sediments will often contain seashells and similar carbonate materials such as crab shells. Organic materials may be present, particularly the remnants of plants and grasses. If the soil has been consistently anaerobic, they may be well-preserved. A strong smell of rotten eggs may come from the soil, due to hydrogen sulfide (H_2S) gas, produced by the reduction of sulfate (and degradation of organic materials).

Oxidized acid sulfate soils can be quite dry, with strong blocky structure. The 'gley' colors disappear, to be replaced by dark to pale browns. Oxidized acid sulfate soils will often contain yellow and orange mottling. The yellow mottle is the mineral jarosite and the orange colors are other iron oxide minerals. The thickness of this mottled layer, its degree of development, the soil moisture and the field test results help distinguish the presence of actual acid sulfate soils. Potential acid sulfate soils may be present under an actual acid sulfate soil layer. The top of the potential acid sulfate soil layer may also be seasonally oxidized due to water table movement.

While the physical features of acid sulfate soils are useful to identify their presence, field tests of soil pH are the key criteria to identify an acid sulfate soil. This criteria is based on the difference between two main pH tests, and the reaction rate of the these tests:

- Field pH (pH_F) - pH in deionized water.
- Field oxidized pH (pH_{FOX}) - pH in 30% hydrogen peroxide.

Table 6 provides a general guide for the interpretation of field pH (pH_F) results.

Table 6 pH_F Values and Descriptions

pH_F value	Description
<4	Oxidized acid sulphate soil (extremely acidic)—jarosite may be present
<4.5	Extremely acidic, most likely due to pyrite oxidation—but can be due to the soil being highly organic, or from prolonged fertiliser use
4.5 - 5.5	Very acidic soil, however it is not conclusive that low pH is due to pyrite oxidation
6.0 - 7.0	No actual acidity—common in undisturbed acid sulphate soil. Marine-influenced samples can have pH_F up to ~8

The pH_F test does not detect potential acidity bound up in un-oxidized sulfides, so the pH_{FOX} test is conducted as well. Rapid reaction with concentrated peroxide causes the breakdown of pyrite and provides an indication of potential acid that could be released from the soil.

Table 7 provides a general guide for the interpretation of field oxidized (pH_{FOX}) results.

Table 7 pH_{FOX} Values and Descriptions

pH_{FOX} value	Description
<3	Strongly indicates acid sulphate soils
3.0 - 4.0	Possibly acid sulphate soil, but less certain—laboratory analysis would be required to confirm presence of sulphides
4.0 - 5.0	Possible small amount of sulphides present, or the sample might be poorly reactive or fine carbonates are present. Laboratory analysis will again be necessary to determine the soil's status
>5	With a minimal difference to pH_F, this is unlikely to be acid sulphate soil unless fine carbonates are present in the sample

The third factor to be observed and considered is the strength of the reaction with peroxide in the pH_{FOX} test. Organic matter and manganese oxides can also cause a reaction so care must be exercised in interpreting a reaction on soils with high organic matter content. **Table 8** provides the guide used for the rating of reaction strength.

Table 8 pHFOX Reaction Strength

Rating	Reaction Strength
1	Low
2	Moderate
3	High

In summary, a general guide to the indication of PASS is: pH_{FOX} <3 + strong reaction + big change from pH_F to pH_{FOX} strongly indicates PASS. However, pH_{FOX} <4.7 with both other factors being satisfied has also been considered PASS for this assessment, in order to maintain a conservative approach to the baseline assessment by including those results that moderately and weakly indicate PASS.

Samples from three sites (sites 9, 22 and 22A) were selected to undergo SPOCAS (Suspension Peroxide Oxidation – Combined Acidity and Sulfate) testing to measure existing acidity and potential acidity. It also determines the liming rate, i.e., the amount of lime needed to neutralize the acid, if the soil is allowed to oxidase and leach the latent acid. The sites tested were selected based on field observations indicating PASS.

5.4.6 Metals in Soils

The Australian National Environment Protection Council (NEPC) has developed measures to assess contamination in Schedule B1 Guideline on Investigation Levels for Soil and Groundwater (NEPM 2013). **Table 9** provides health investigation levels for assessment of metal contaminants in soils. Investigation levels are the concentrations of a contaminant above which further appropriate investigation and evaluation is required, representing a Tier 1 risk assessment under NEPM (2013). These levels are considered conservative for non-residential areas, nonetheless the potential for people to grow tree crops or gardens, or source food from all areas of the study area remains a possibility and therefore these levels are relevant to this screening process.

The US Environmental Protection Agency (EPA) has developed Ecological Soil Screening Levels (Eco-SSLs) for most metal contaminants as shown in **Table 9**. Separate Eco-SSLs have been calculated for contaminants and their impact to plants, soil invertebrates, avian wildlife and mammalian wildlife. Where no values are listed, the US EPA acknowledges there is insufficient data to provide a threshold, however commentary regarding typical background ranges are available in the Eco-SSL documents. These background levels have been included in **Table 9** where no other thresholds are available.

A total of 59 soil samples were screened for metal concentrations in both the whole soil sample and the less than 63_µm fraction, and compared with the health-based investigation levels (NEPM 2013) and the Eco-SSLs (US EPA 2003 to 2008). The results of the testing are summarized in **Section 6.3.9** and the raw laboratory reports are provided in **Appendix B**.

Table 9 Health-based Investigation Levels and Eco-SSLs for Soil Contaminants

	Health Based Investigation Levels (mg/kg)	US EPA Ecological Soil Screening Levels (mg/kg)				General background levels (mg/kg)
	NEPM (2013) Residential A	Plants	Soil Invertebrates	Wildlife		
				Avian	Mammalian	
Aluminum	N/A	N/A	N/A	N/A	N/A	<300,000*
Arsenic	100	18	N/A	43	46	N/A
Barium	N/A	N/A	330	N/A	2,000	N/A
Beryllium	60	N/A	40	N/A	21	N/A
Boron	4,500	N/A	N/A	N/A	N/A	N/A
Cadmium	20	32	140	N/A	N/A	N/A
Chromium	100	N/A	N/A	N/A	N/A	N/A
Cobalt	100	13	N/A	120	230	N/A
Copper	6,000	70	80	28	49	N/A
Iron	N/A	N/A	N/A	N/A	N/A	<550,000*
Lead	300	120	1,700	11	56	N/A
Manganese	3,800	220	450	4,300	4,000	N/A
Nickel	400	38	280	210	130	N/A
Selenium	200	0.52	4.1	1.2	0.63	N/A
Silver	N/A	560	N/A	4.2	14	N/A
Strontium	N/A	N/A	N/A	N/A	N/A	<1,000**
Tin	N/A	N/A	N/A	N/A	N/A	50***
Vanadium	N/A	N/A	N/A	7.8	280	N/A
Zinc	7,400	160	120	46	79	N/A
Mercury	40	N/A	N/A	N/A	N/A	N/A

* Sourced from US EPA Eco-SSL information
** Sourced from weppi.gtk.fi/publ/foregsatlas/text/Sr
*** Sourced from ANZECC 1992
N/A = Not Available. The relevant guidelines provide no value for this item.

5.4.7 Soils Petroleum Hydrocarbon Screening

Ecological screening levels (ESLs) for petroleum hydrocarbon compounds, including benzene, toluene, ethylbenzene and xylenes (BTEX), in soils are provided by NEPM (2013) for assessing risk to terrestrial ecosystems. Different ESLs apply to coarse and fine-grained soils and land uses, and are generally applicable to the top 2 m of soil. **Table 10** provides these ESLs for various TPH fractions and BTEX compounds.

Table 10 Ecological Screening Levels for Petroleum Hydrocarbons in Soil (NEPM 2013)

CHEMICAL	Soil texture	ESLs (mg/kg dry soil)		
		Areas of ecological significance	Urban residential and public open space	Commercial and industrial
F1 C_6-C_{10}	*Coarse/ Fine*	125*	180*	215*
F2 >C_{10}-C_{16}		25*	120*	170*
F3 >C_{16}-C_{34}	*Coarse*	-	300	1700
	Fine	-	1300	2500
F4 >C_{34}-C_{40}	*Coarse*	-	2800	3300
	Fine	-	5600	6600
Benzene	*Coarse*	10	50	75
	Fine	10	65	95
Toluene	*Coarse*	10	85	135
	Fine	65	105	135
Ethylbenzene	*Coarse*	1.5	70	165
	Fine	40	125	185
Xylenes	*Coarse*	10	105	180
	Fine	1.6	45	95
Benzo(a)pyrene	*Coarse*	0.7	0.7	0.7
	Fine	0.7	0.7	0.7

Notes:
(1) ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability.
(2) '-' indicates that insufficient data was available to derive a value.
(3) To obtain F1, subtract the sum of BTEX concentrations from C_6-C_{10} fraction and subtract naphthalene from >C_{10}-C_{16} to obtain F2.

Note that the polycyclic aromatic hydrocarbon, benzo(a)pyrene was not included in the analysis suite for this study.

5.4.8 Soil Aggregate Stability

Aggregate stability refers to the stability of soil structural units (aggregates) when immersed in water. Instability may be indicated by slaking or clay dispersion. A soil with low aggregate stability is likely to be compact and poorly structured, or be susceptible to erosion if used in earthworks (Hazelton and Murphy 2007). The Emerson aggregate test is a measure of soil dispersibility or soil structural stability. This test was applied to all soil samples collected and the following general levels of dispersibility were assigned as shown below in **Table 11**.

Table 11 Emerson Aggregate Test Classes

Dispersibility (Erodibility)	Emerson Aggregate Classes†
Very High	1 and 2(3)
High	2(2)
High to moderate	2(1)
Moderate	3(4) and 3(3)
Slight	3(2), 3(1) and 5
Negligible/aggregated	4, 6, 7 and 8

† Source: Hazelton and Murphy (2007)

5.4.9 Soil Fertility

Soil fertility refers to the ability of the soil to sustain plant growth. Whilst there are many factors to understanding the fertility status of a soil, the overall concept of a limiting factor will restrict plant growth to that limiting factor is a generally accepted principle. The entire study area displays the ability to grow vegetation, and therefore the issue of soil fertility is more of a factor in the agricultural sense where people require the soil to grow food crops and trees on a local scale in and around villages.

The key indicator used to obtain a soil fertility status for samples collected in the study area is cation exchange capacity (CEC). CEC is the capacity of a soil to hold and exchange cations. It provides a buffering effect to changes in pH, available nutrients, calcium levels and soil structural changes. As such it is a major controlling agent of stability of soil structure, nutrient availability for plant growth, and the soil's reaction to fertilizers and other ameliorants (Hazelton and Murphy 2007). A low CEC means the soil has a low resistance to changes in soil chemistry that are caused by land use. **Table 12** below outlines the rating used to rate CEC in collected samples, with the results shown for each representative soil in **Section 6.3**.

Other fertility related tests required under Total General Specification Environment (GS_EP_ENV_111) Environmental Baseline and Monitoring Studies: Onshore Sites, include: total organic matter, total organic carbon, total nitrogen and total phosphorus. The results of these tests are shown in **Appendix B.**

Table 12 Cation Exchange Capacity Rating

CEC cmol(+)/kg	Rating†
<6	Very low
6 - 12	Low
12 - 25	Moderate
25 - 40	High
>40	Very High

† Source: Hazelton and Murphy (2007)

5.5 Laboratory Analysis

Soil samples from selected locations were submitted to ALS Brisbane for analysis of the following parameters:

- Particle size analysis
- Moisture content
- Soil density
- pH
- Electrical conductivity
- Chloride
- Cation exchange capacity and exchangeable cations
- Organic matter and organic carbon
- Color
- Total nitrogen and total phosphorus
- Emerson aggregate test
- Metals (Ba, Cd, Cu, Pb, Zn, Fe, Co, Ni, V, Cr, Sr, Al, Hg)
- Total petroleum hydrocarbons (TPH)
- Acid sulfate soil field screening tests (pH_F and pH_{FOX}) on soils suspected to be PASS, with further SPOCAS testing on select samples

5.6 Permits Obtained

5.6.1 Oil and Gas Act Permit

Under the *Oil and Gas Act 1998*, a Section 116 notice is required in order to legally enter land to undertake surveys. This approval has been obtained for the Project.

Pursuant to Oil and Gas Regulation 2002, Sections 12 and 86, TEP PNG has received approval from the Petroleum Division of the Department of Petroleum and Energy for entry onto private land in PRL15 to undertake topographic, geophysical, environmental and social studies.

5.6.2 CEPA Permit

No CEPA permits were required for the study.

5.6.3 Australian Quarantine and Inspection Services Permit

Australian Quarantine and Inspection Services (AQIS) permits are required for the importation of soil samples from Papua New Guinea to Australia. Samples were imported through the quarantine permit held by Australian Laboratory Services.

5.7 Limitations

Survey locations within the study area were restricted to locations accessible by helicopter and trekking, including well-used logging tracks that follow the proposed export pipeline corridor. The two sites assessed on this track were accessed via helicopter.

The proposed onshore export pipeline route had not yet been selected at the time of the survey hence the study could not specifically target likely disturbance areas with a higher intensity survey.

The varied terrain of PRL-15 and along much of the export pipeline corridor, consisting of hills, cliffs, crests, ridges, ravines, valleys and alluvial floodplains, limits the available soil inspection sites to a few representative profiles, and relies on toposequence commentary and the presentation of dominant/sub dominant soil types to describe soils in specific landforms.

The baseline assessment provides preliminary screening level tests for acid sulfate soils.

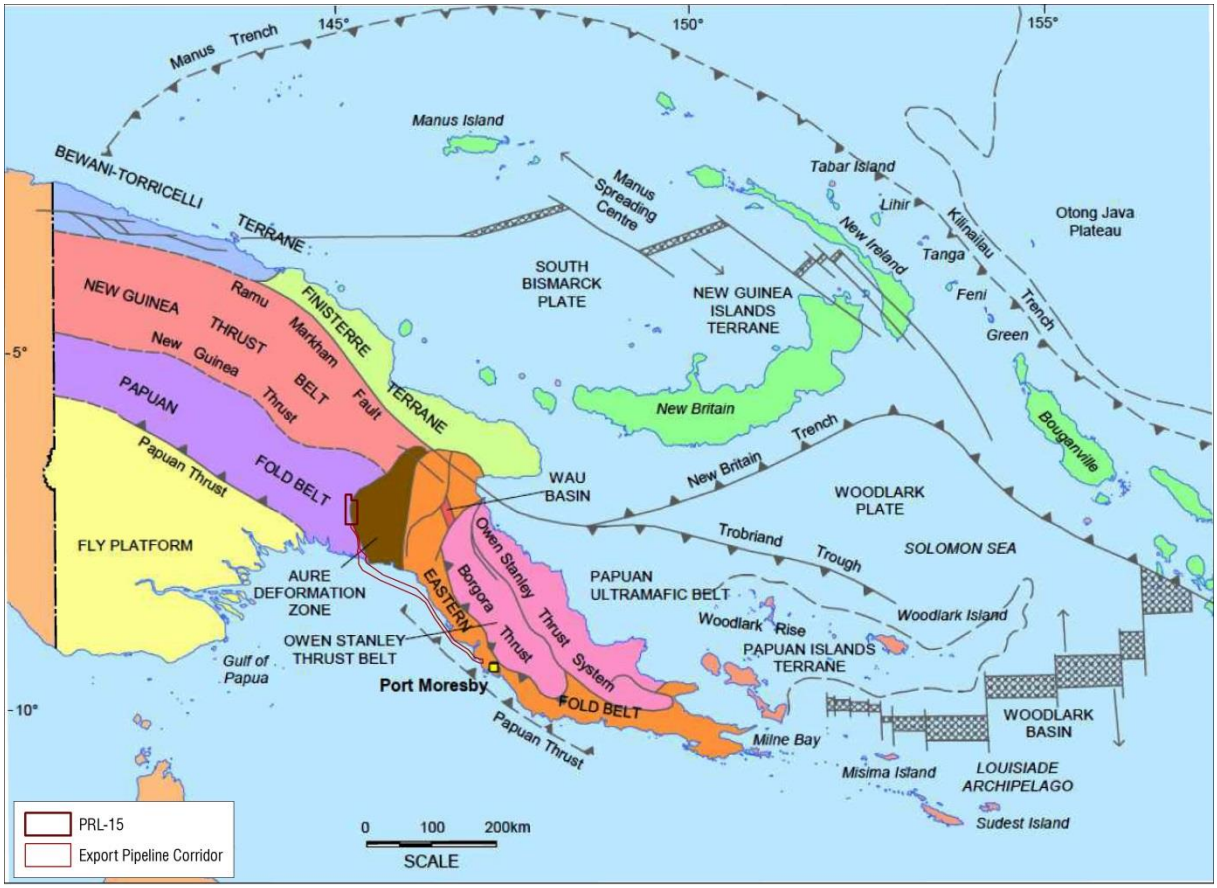
6 BASELINE CHARACTERISATION

6.1 Geology

This section describes the tectonic, seismic, volcanic and stratigraphic setting of the study area and surrounds. Field observations of the study area were conducted in November 2016 and are tabulated in **Appendix C**.

6.1.1 Tectonic and Seismic Setting

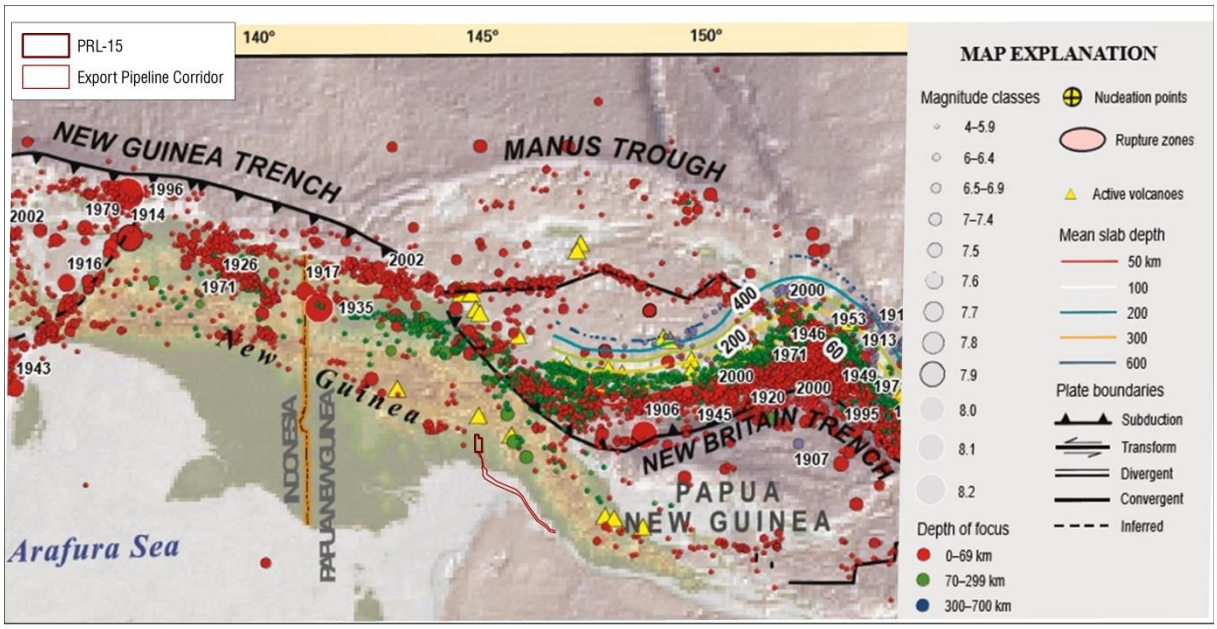
The Elk-Antelope gas field is located within central Papua New Guinea in the southern foothills of the Central Range within the Papuan Fold (and Thrust) Belt and the Aure Deformation Zone (**Figure 3**). The Central Range, or Central Highlands, is a 3,000 m high mountain belt that extends a distance of over 1,300 km and is up to 150 km wide. The Central Range has been formed as a result of collisions between the Pacific and Australian plates. Currently, the Pacific Plate is moving westward relative to a fixed Australian Plate with a convergent component across the New Guinea region. The differential motion between the Australian and Pacific plates is accommodated by four microplates: North Bismarck Plate, South Bismark Plate, Woodlark Plate and the New Guinea Highlands block. Crustal deformation and seismicity are concentrated along these boundaries (Wallace *et al*. 2004, Williamson and Hancock 2005).



Source: Williamson and Hancock, 2005.

Figure 3 Tectonic Domain Map of Papua New Guinea

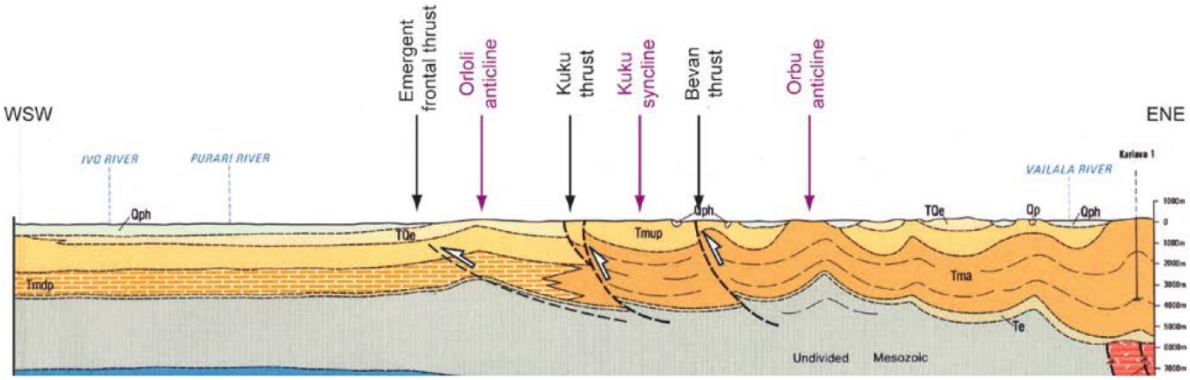
The seismicity is more prevalent in the northern part of Papua New Guinea, i.e. the Central Orogenic Belt and along Papuan New Guinean northern coast, which is characterized by high rates of seismicity and several large magnitude Mw (>7) earthquakes on the historical record. The Papuan Fold (and Thrust) Belt, the Aure Deformation Zone and the eastern Papuan Basin from the Central Range to the southern coast, where the Project upstream area is located, have moderate levels of seismicity (**Figure 4**). Focal mechanisms and geodetic data indicate the Papuan Fold Belt is accommodating primarily southwest-directed plate motion (Wallace et al., 2004). The Papuan Fold Belt is bounded to the southwest by the Fly Platform, which is the stable northern margin of the Australian craton. The Aure Deformation Zone is a now-inverted trough characterized by marine sediments folded on north-south trending horizontal fold axes. The intensity of folding decreases moving upward from the early through the Middle Miocene and into the overlying Quaternary sediments (Williamson and Hancock, 2005).



Source: Benz *et al*, 2011.

Figure 4 Historical Seismic Map of the New Papua Guinea Region 1900 to 2010

A schematic geological cross-section of the Papuan Fold (and Thrust) Belt is shown in **Figure 5**. Towards the northern section (right hand side of the figure) there is a complex zone of low-angle shallow detachment faults and reactivated basement involved the formation of sub-parallel folds and faults. The study area is located along the southern margin of the New Guinea Highland block, which moves southwest. The south westward migration of this microplate is a result of the arc-continent collision between the Australian and south Bismark plates that is actively uplifting the Central Range. Towards the southern part of the cross-section in **Figure 5**, there is a reduced number of faults and corresponding lower levels of historic seismicity. There are several active faults within PRL-15 influencing structural geology and landform, as shown as major fault lineaments in **Figure 6**.



Source: Unpublished report 2014

Figure 5 Schematic Geological Cross-section of Papua Fold and Thrust Belt

6.1.2 Structural Geology

The structural geology of the study area is dominated by north-south trending features of the Papua Fold and Thrust belt. The area is characterized by a complex sequence of "narrow anticlines separated by broad synclines" (unpublished report, 2014). The area also includes a series of detachment faults and reactivated basement involved normal faults. The geological structures within the study area are considered to have moderate to high risk fault hazards. Structural mapping has been predominantly by remote sensing (aerial photography and satellite imagery interpretation). The structural features in the area are expressed in the landform with the location of faults and folds correlating with the occurrence of strike ridgelines. Named structural features include:

- Orloli and Hororo anticlines – occurring along the onshore export pipeline corridor;
- Bevan and Pemani faults – to the east of the study area (not crossed by onshore export pipeline corridor);
- Kuku fault – occurring in the mid-western section of PRL-15;
- The Mena fault system;
- The Horsetail anticline fault; and
- The Era basement fault.

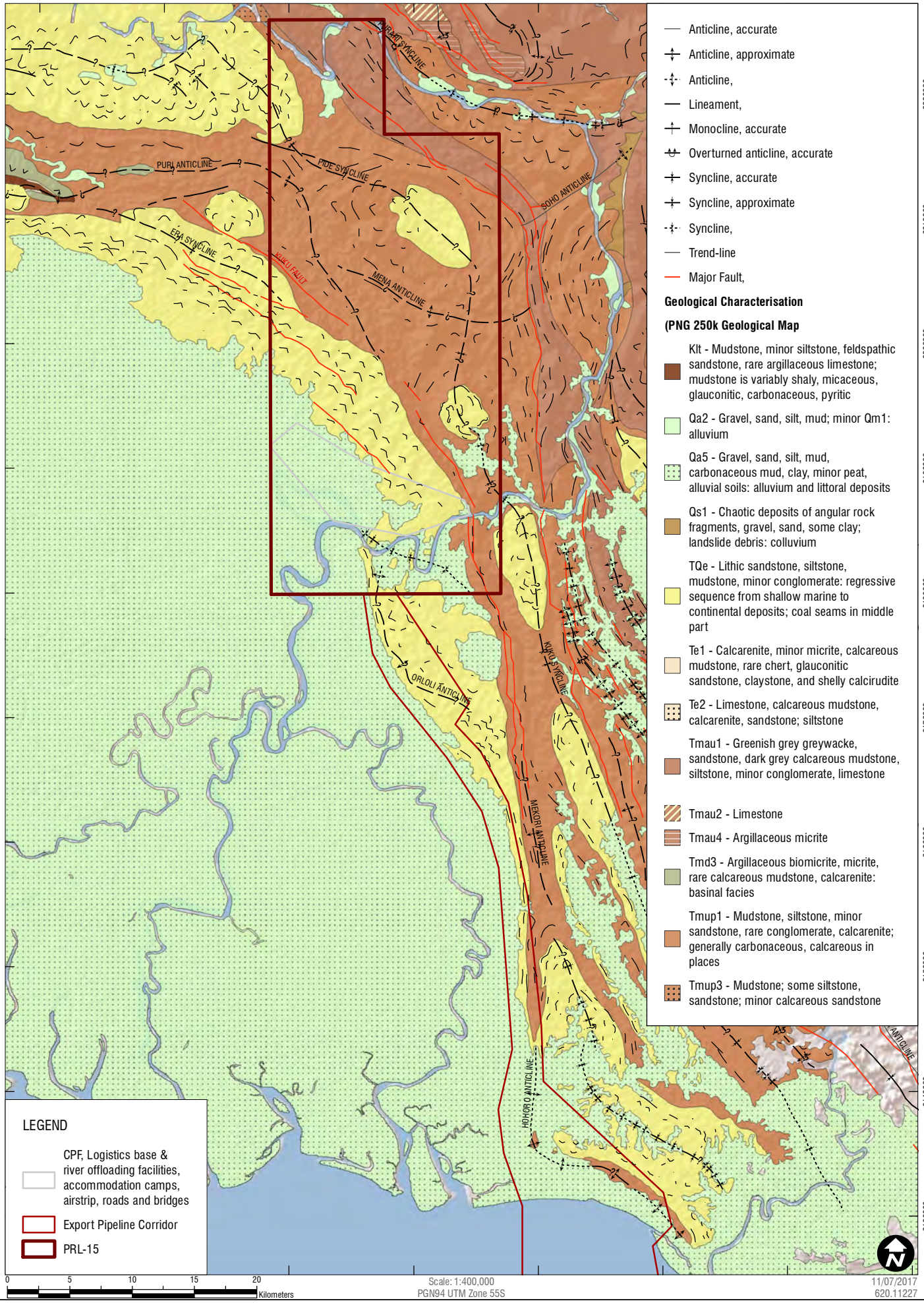
These structural features act as primary control features to the topography seen in the study area with the strike ridge and escarpment landforms a product of these structures. Where faults remain active, they have potential to represent geohazards to Project infrastructure both directly through displacement and differential movement and indirectly through destabilization and/or initiation of landslides or mass movement.

6.1.3 Lithology

The lithology of the study area is shown in **Figure 6**. PRL-15 and the eastern edge of the onshore export pipeline corridor are dominated by two geological characterizations Tmup (Mudstone, siltstone, minor sandstone, rare conglomerate, calcarenite; generally carbonaceous, calcareous in places) and TQe (Lithic sandstone, siltstone, mudstone, minor conglomerate with regressive sequence from shallow marine to continental deposits and coal seams). Both these geological characterizations are located within the ridge and ravine landforms of the study area. The south west corner of PRL-15 (including the proposed CPF area), the western edge of the onshore export pipeline corridor and the littoral plains and beaches are categorized as Qa5 (Gravel, sand, silt, mud, carbonaceous mud, clay, minor peat, alluvial soils: alluvium and littoral deposits). This lithology is located on the alluvial plains and of the Purari River and the beach ridges and plains towards the coast.

6.1.4 Volcanism

There were no volcanoes within the study area. The closest active volcanoes are Crater Mountain and Yelia, which are located 65 km and 85 km away from PRL-15 respectively, as shown in **Figure 7** (source: NOAA, 2017).



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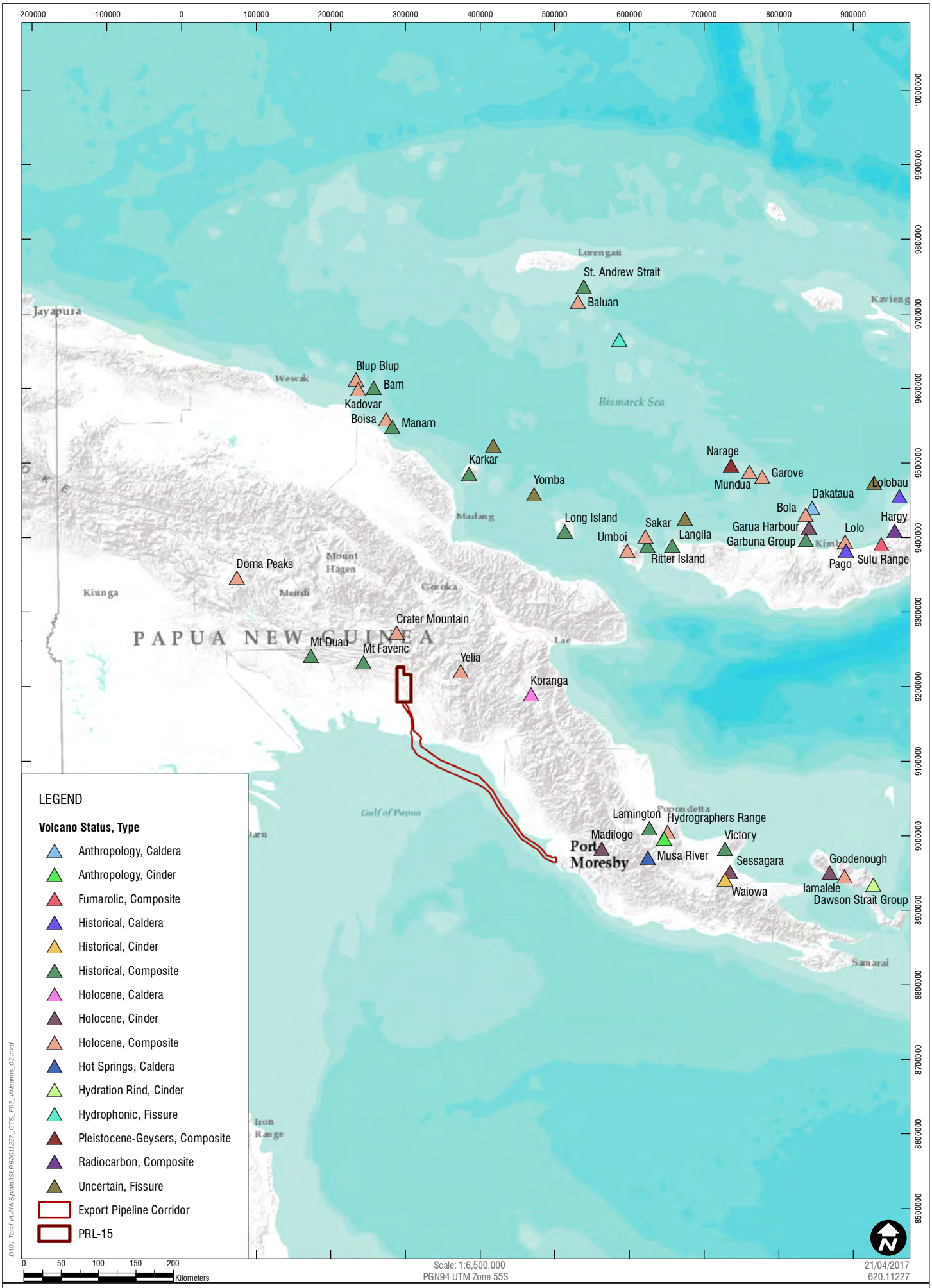
Geology of The Study Area

FIGURE 6



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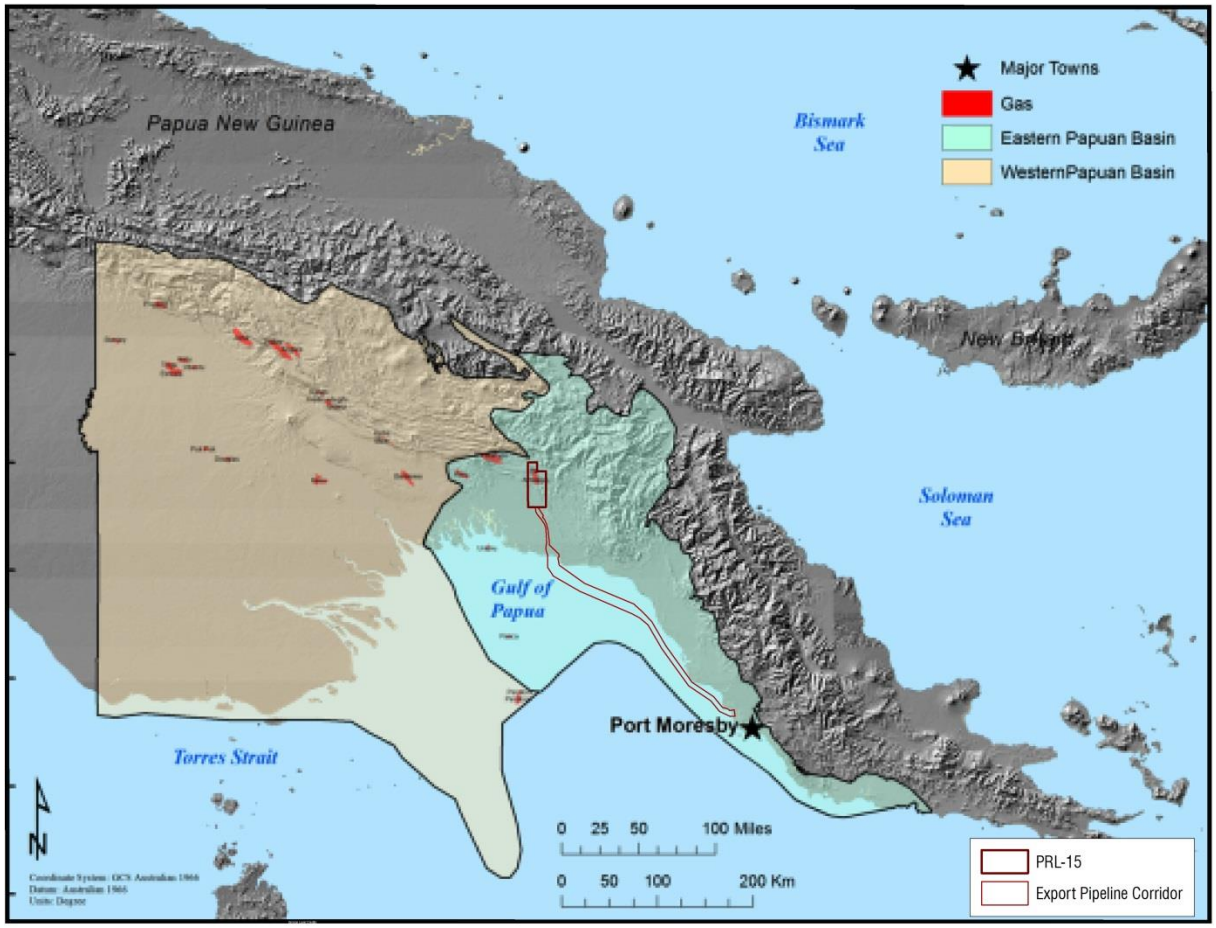
Location of Papuan New Guinea Volcanoes

FIGURE 7

6.1.5 Regional Stratigraphy of the Eastern Papuan Basin

The study area is located within the eastern section of the Papuan Basin which occupies the southern part of the Papuan mainland. Sediments of the Papuan Basin underlie the southern plains and are exposed in the adjacent fold-thrust belt in which the Elk-Antelope gas field is located. The Papuan Basin is divided into the Western Papuan Basin and Eastern Papuan Basin by the Duau-Favenc Lineament (**Figure 8**).



Source: EMTV 2015

Figure 8 Locality Plan of the Eastern and Western Papuan Basins

The Papuan Basin is underlain by Australian craton of Precambrian age in the west and of Palaeozoic age in the east. The boundary between Precambrian and Palaeozoic basement is at around 141°E longitude. In the Eastern Papuan Basin, where the study area is located, the sedimentary section is 4 km thick and has Triassic and Jurassic sediments at its base. The Palaeozoic basement includes low-grade Permian to early Triassic metasediments intruded by Middle Triassic and Early Jurassic granites and overlying Jurassic to Tertiary sediments (unpublished report, 2014). The Papuan Basin has a complex history. Initially, during the Middle to Late Triassic, the basin was in an extensional passive margin setting before it entered a compressional foreland basin regime in the Neogene following the collision of Papua New Guinea with the Melanesian island arc. The basin is bounded to the north and northeast by basement highs, consisting of igneous and metamorphic rocks of the Central Highlands (Geoscience Australia, 2017).

6.1.6 Field Survey

The site fieldwork consisted of visiting soil sampling sites with opportunistic geological and geomorphological observations being undertaken where possible. The data from these sites are tabulated in **Appendix C**.

The predominant rock types encountered throughout the study area were of a sedimentary origin, including interbedded, mudstones, siltstones, sandstones, conglomerates, and limestone, as shown in **Plate 1**. Some evidence of volcanic lithologies was found in basaltic road base spread on access roads and drill pads. Carbonaceous sedimentary rocks in the form of carbonaceous mudstones and coal were found as detrital angular, cobble-sized particles in Oyomo Creek in the area of the proposed site for the CPF, as shown in **Plate 2.** Varying levels of structural deformation was observed in the field from relatively gently dipping strata to strongly faulted and folded materials, as shown in **Plate 3**.

Plate 1 ANT-6 Well Pad Displaying Interbedded Siltstone, Sandstone and Fossiliferous Limestone Beds (inset)

Plate 2 Carbonaceous Sedimentary Rocks within Bedload of Oyomo Creek

Plate 3 Structurally Deformed Laminated, Calcareous Mudstone and Siltstone on Road Cutting Adjacent to Elk-3 Wellpad

6.1.7 Rockfalls, Landslides and Debris Flow Geohazards

Rockfalls, landslides, debris flows and gullying are common geohazards for the study area particularly within the ridge and ravine landform areas. These geohazards are triggered by large rainfall events, concentrated surface water drainage and seismic activity. If triggered, these geohazards can cause significant land movement due to the topography and steeply dipping strata, which have weak, clay-rich rock masses interbedded with strong rock masses.

6.2 Geomorphology and Terrain

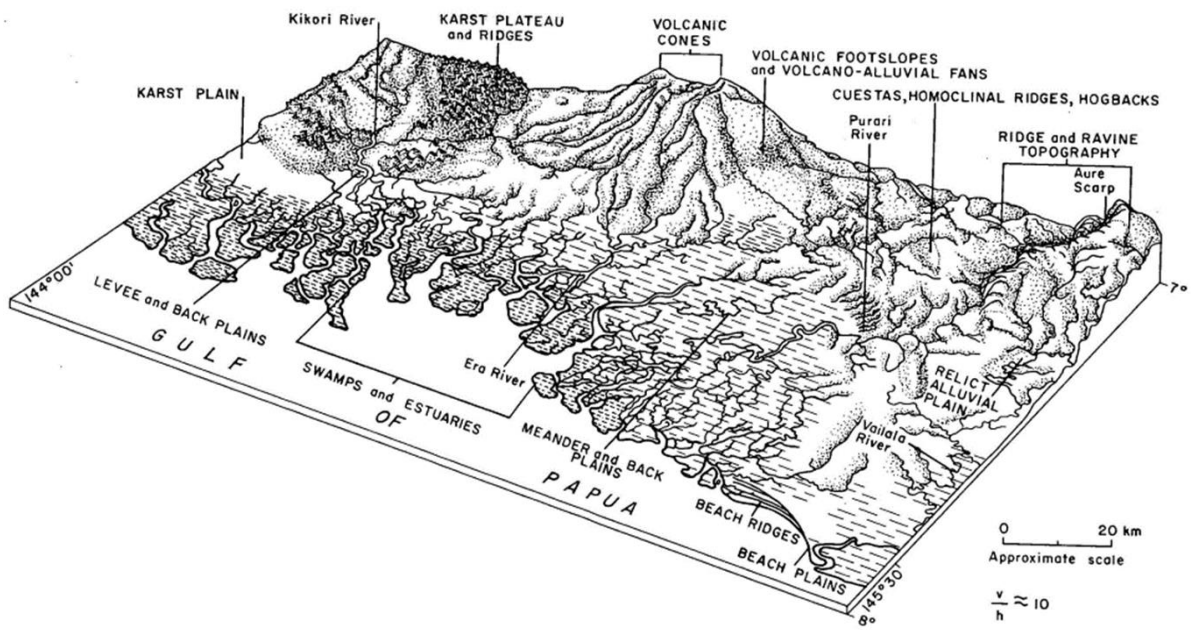
This section deals with the geomorphological setting and terrain of the study area. Geomorphic and terrain field observations of the study area were conducted in November 2016 and are tabulated in **Appendix C**. The maximum elevation within PRL-15 is about 410 m ASL. The proposed onshore export pipeline corridor generally travels downslope to sea level at the coast.

To the west of PRL-15, outside the study area, the confluent cones of the extinct volcanoes Mount Duau and Mount Favenc rise to approximately 1,850 m above sea level. In the north section of the study area within PRL-15 and the eastern edge of the onshore export pipeline corridor, the relief is pronounced with homoclinal or hogback/strike and ridge and ravine landforms of the southern foothills of the Central Range. The relief is constituted by a succession of ridges and valleys oriented NNW to SSE of the Kuku fault ridge and basins formed by syncline structures of the Nema, Kuku and Goigi basins (unpublished report, 2014). The study area is drained predominantly by the Purari River system to the north, east and south, as well as the Mena and Era rivers to the west and south. Drainage of the Purari River follows roughly the west-northwest structural grain until it is forced by the Aure Scarp to flow south with a slightly winding channel and few alluvial flats. The Purari River catchment is 33,670 km² in size and occupies a considerable portion of the central and southern part of mainland Papua New Guinea. It lies between the Kikori and Vailala rivers and extends from the highest mountain of Papua New Guinea, Mount Wilhelm to the Gulf of Papua.

Towards the southern part of PRL-15 (and further south along the western edge of the onshore export pipeline corridor), the landform becomes flat alluvial plains, with terrain features including oxbow lakes, swamps, discontinuous levees, point bars and scroll complexes. The branches and tributaries of the Purari River converge into a main channel. The drainage status across this area varies greatly depending on local conditions, however large areas of this landform are subject to flooding.

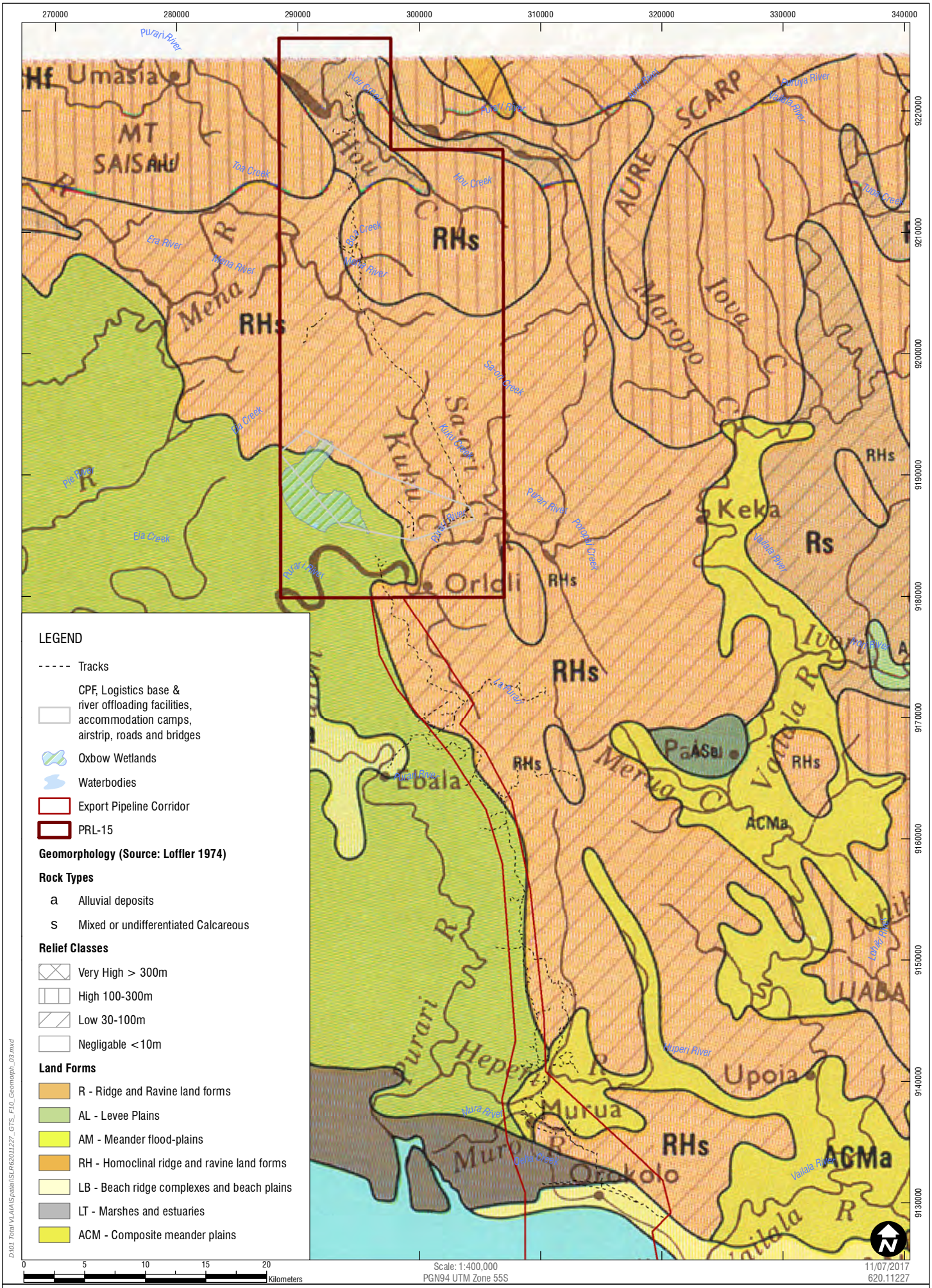
The river follows a meandering course, south toward the coast through the Purari delta, where it splits up into an intricate network of channels which pass gradually into tidal inlets. East of the Purari River mouth, the study area encompasses the littoral (beach) landform which includes the Orokolo Bay area.

Figure 9 provides a schematic representation of the geomorphology of the study area and surrounding region. **Figure 10** outlines the mapped geomorphological units of the study area based on Loffler (1974). **Figure 11** shows the topography within the study area, based on a high resolution LiDAR survey undertaken for the Project in 2016. The main drainage lines are shown on **Figure 11** to indicate the relationship between surface water drainage and geomorphology and terrain. The hydrology aspects of these drainage patterns are discussed in detail in the hydrology and meteorology baseline study.



Source: Löffler, 1974

Figure 9 Schematic Representation of Geomorphology of Study Area and Surrounds



LEGEND

- Tracks
- CPF, Logistics base & river offloading facilities, accommodation camps, airstrip, roads and bridges
- Oxbow Wetlands
- Waterbodies
- Export Pipeline Corridor
- PRL-15

Geomorphology (Source: Loffler 1974)

Rock Types

- a Alluvial deposits
- s Mixed or undifferentiated Calcareous

Relief Classes

- Very High > 300m
- High 100-300m
- Low 30-100m
- Negligable <10m

Land Forms

- R - Ridge and Ravine land forms
- AL - Levee Plains
- AM - Meander flood-plains
- RH - Homoclinal ridge and ravine land forms
- LB - Beach ridge complexes and beach plains
- LT - Marshes and estuaries
- ACM - Composite meander plains

0 5 10 15 20 Kilometers

Scale: 1:400,000
PGN94 UTM Zone 55S

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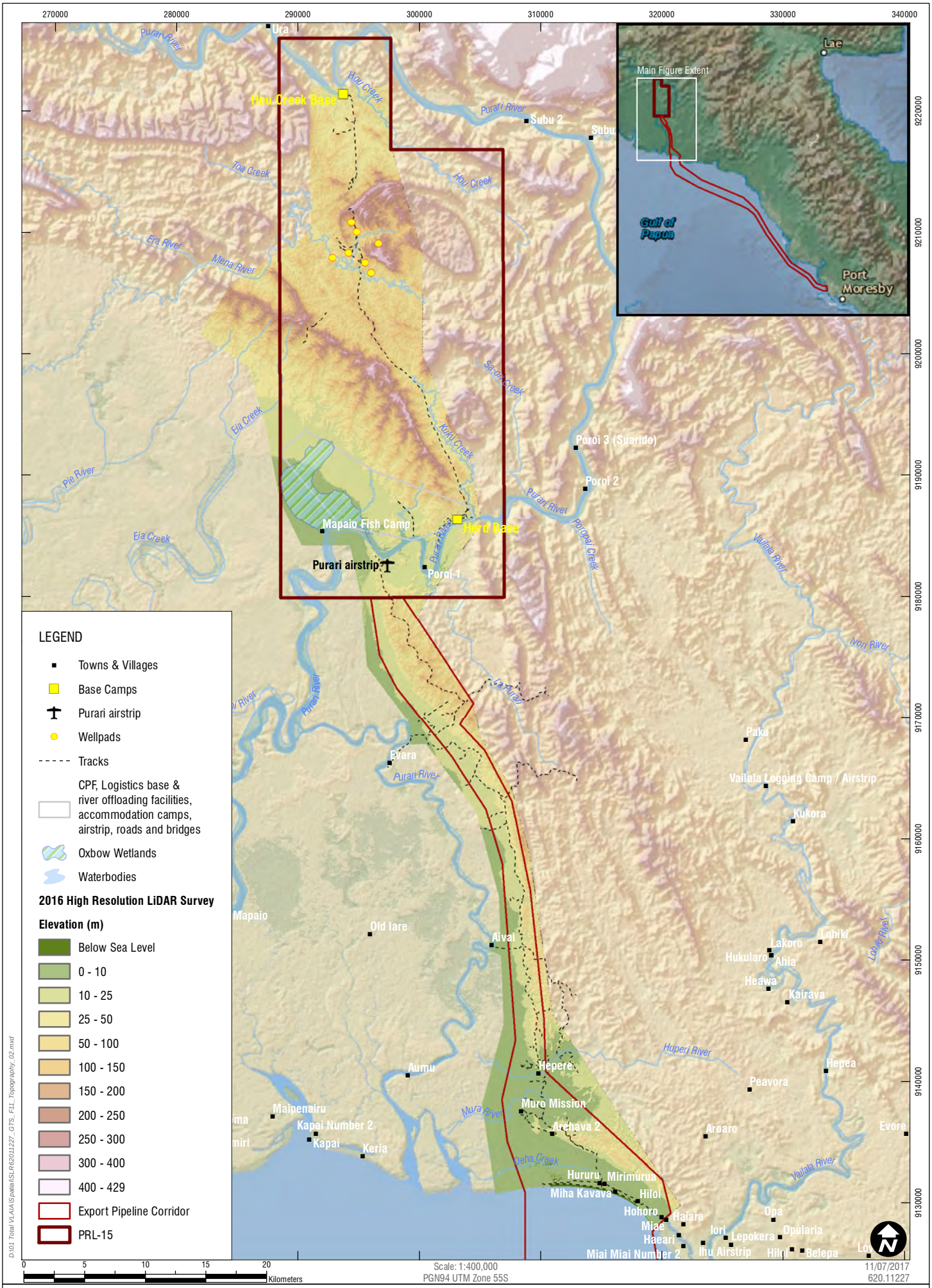
Geomorphological Units of Study Area

FIGURE 10



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Topography of the Study Area

FIGURE 11

6.2.1 Ridge and Ravine Landform

In the north section of the study area within PRL-15, the relief is pronounced with landforms formed by tectonic processes, i.e., ridge and ravine landforms. The relief is constituted by a succession of ridges and valleys oriented NNW to SSE of the Kuku fault ridge and basins formed by syncline structures of the Nema, Kuku and Goigi basins (unpublished report, 2014). This area corresponds to the foothills of the frontal part of the Papuan Fold Belt. The landform types in the foothills and central ranges are predominantly determined by their lithologies and structural orientations. Mixed sedimentary rocks form homoclinal ridges (**Plate 4**) or hogback/strike (**Plate 5**), ridge and ravine landforms. The distinction between homoclinal and strike/hogback ridges is that the dip slopes of the homoclinal ridges generally range from 10° to 25°, whereas the hogback/strike ridges have dip slopes generally exceeding 25°. The ridge and ravine landforms continue running south along the eastern edge of the onshore export pipeline corridor towards the coast.

The most commonly occurring rock types are well-indurated mudstone, siltstone, sandstone and limestone often interbedded with layers of less indurated rock of similar lithologies. Although some dip slopes may appear very smooth and regular from an aerial perspective, on the ground they are mostly irregular owing to slumping and gullying. Low-relief (10 to 50 m) ridge and ravine landform is typical of the soft mudstone adjacent to the Purari River, occurring along the export pipeline corridor and in PRL-15 as shown in **Plate 6**. In the northeast of PRL-15, high-relief (100 to 400 m) ridge and ravine landform with significant cliffs is the dominant topographic feature. This area is underlain by thickly bedded to massive sandstone. Both landform types are scarred by numerous slumps, landslides and by gullying. Several faults and fractures are expressed in the topography by linear scarps. Slopes developed on coarse-grained sedimentary rocks such as sandstone are less irregular and less dissected than on fine grained sedimentary rocks. Deep-seated slumps also occur and are often considerably larger in extent than on fine-gained rocks where they tend to be more numerous but smaller.

Plate 4 Example of Homoclinal Ridges near ANT-3 and ANT-5 Wellpads

Plate 5 Hogback Ridges within Elk-Antelope Gas Field

Plate 6 Low Relief Hills in PRL-15

6.2.2 Composite Meander and Levee Alluvial Landform

The Purari River delta is formed of a central meander, back plains and swamp landform (**Plate 7**). The meander plains include oxbow lakes, swamps, discontinuous levees, point bars, and scroll complexes. The back plains are subject to frequent flooding, and are permanently swampy where drainage is impeded by levees or meander plains. The drainage status varies greatly, depending on local conditions, from poorly to well-drained. Relict alluvial plains, probably of Pleistocene age, occur locally between the Purari and Vailala rivers (Löffler, 1974). The proposed CPF site, and the western edge of the onshore export pipeline corridor, is within this alluvial plain at the foot of the ridge and ravine landform.

Plate 7 Meandering River and Back Plains Landform of the Purari River Delta

6.2.3 Recent Littoral Landform

In the southern portion of the onshore export pipeline corridor adjacent Orokolo Bay, the littoral landform consists of beach, beach ridge complexes and beach plains. Beach ridge systems and beach plains are composed by recent sediments shaped as long parallel ridges and swales (Löffler, 1974), as shown in **Plate 8**. Also shown are settlement locations on the back beach area and tidal marshes, estuaries and lagoons in this area. During storm surges, waves sometimes inundate these populated, low lying areas (Pers. comm. local villagers 2016).

Immediately to the west of this area, the landform is dominated by the main eastern river mouth distributary of the Purari River which discharges into the Gulf of Papua (**Plate 9**). The drainage is tidal with a maze of channels which are mainly made up of swamps, marshes and estuaries. Mudbanks along the channels support mangrove vegetation.

Plate 8 Recent Littoral Landform at Orokolo Bay

Plate 9 Mouth of the Purari River (Alele and Aievi Passages with Oeha Creek in foreground)

6.3 Soils

6.3.1 Soil Survey Background

The soil survey conducted in November 2016 aimed to ground-truth the soil mapping provided by PNGRIS and the CSIRO Land Research Series No.23 'Lands of the Kerema-Vailala Area Territory of Papua and New Guinea (1969). Note that the latter report and mapping only covers the southern half of the study area. The soil units displayed in the PNGRIS appear to be based on the CSIRO mapping (1969), however uncertainty exists regarding the source of information obtained in PNGRIS for the northern section of the study area in PRL-15. It appears this mapping may not be based on soil profile information, but rather a combination of remote sensing data that was used to predict soil units based on geology, topography, rainfall, and watertable information. The level of detail shown in the PNGRIS mapping should not be used to represent field-based assessment as it implies that the scale of mapping reflects a higher intensity field survey than was undertaken for the Project. Therefore the soil units presented here reflect the level of survey undertaken and the generalized dominance of soil units likely to occur within specific topographies and land systems.

The fieldwork recorded a total of 27 observations, which consisted of 16 detailed sites and 11 check sites. A total of 59 samples from 15 sites underwent laboratory analysis. The results show the study area contained soils generally consistent with the soil orders of the PNGRIS mapping and the CSIRO mapping of land systems and soil types. It should be noted that the soil units described in the CSIRO (1969) mapping was based on the USDA Soil Taxonomy Edition 7, 1960. The current version is Edition 12 (2014) and some of the soil units described in 1960 have been omitted or grouped in other soil units with name changes, therefore there are occasional inconsistencies between the taxonomy classifications of the older mapping and this report. The revised soil unit maps reflect the survey intensity of the field investigations.

6.3.2 Summary of Soil Complexes and Soil Units

The study area has been divided into four soil complexes and separated using toposequence or terrain features to further identify the locations of soil units. These soil units are as shown in **Table 13**, described below and shown in **Table 12.** Zoomed in figures of the soil complexes of both PRL-15 and the onshore export pipeline corridor, are shown in **Figure 13**, and **Figure 14** respectively.

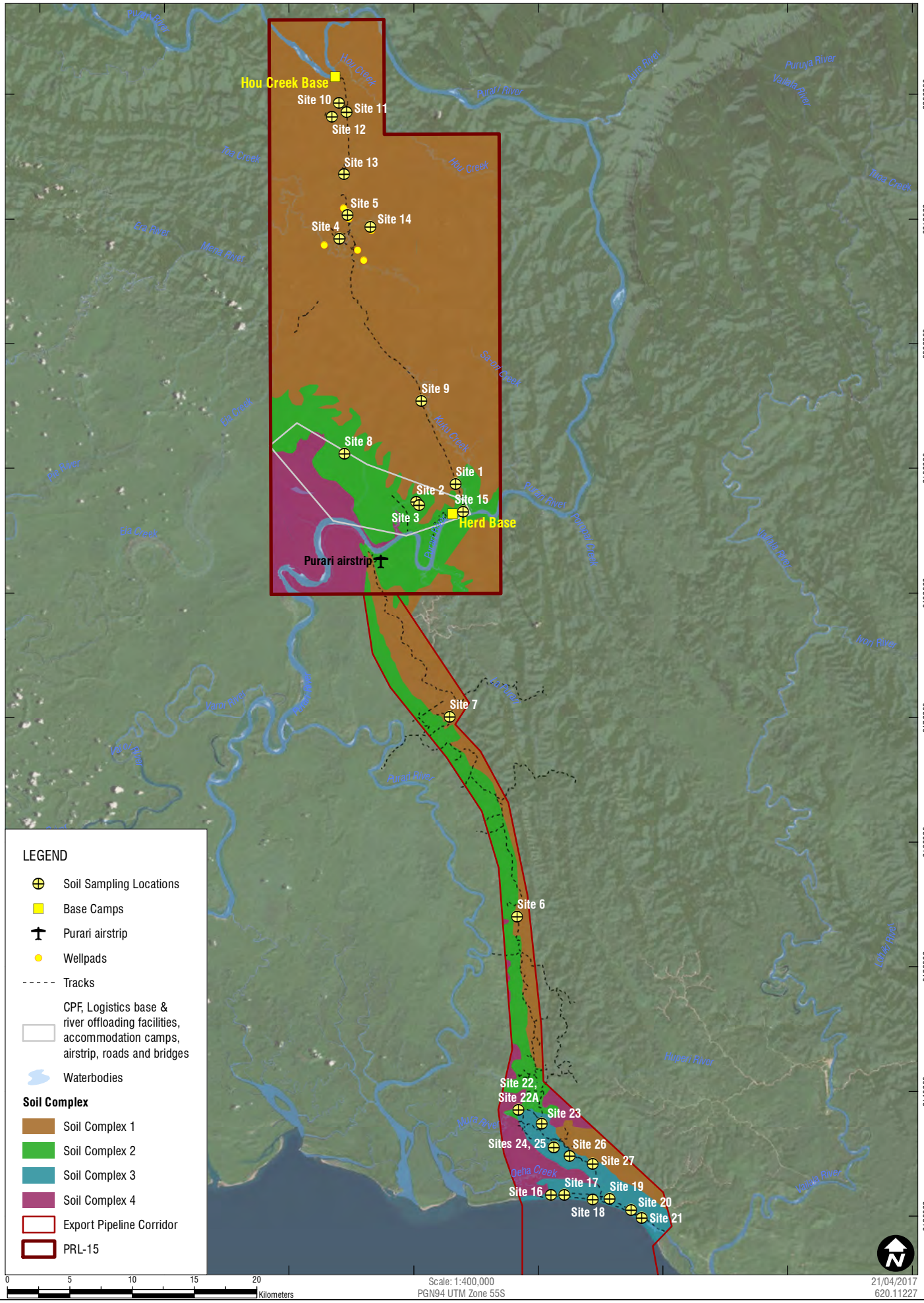
Table 13 Summary of Soil Complexes and Soil Units

Terrain Feature	Land System Description (CSIRO 1969)	Soil Complex and Soil Unit Label	General Soil Description	Representative Sites
Soil Complex 1: Denudational, Low to High relief (10 to 400m)				
Hillslopes and crests	Lohiki - High hills with moderate to very steep slopes and benches with shallow uniform textured acid soils with altered B horizons and minor undifferentiated colluvial soils.	Soil Unit 1A: Lithic Udorthents	Dominant: Shallow poorly formed fine to coarse textured soils with minimal to no pedological development due to erosional factors preventing soil developing over the frequent outcropping sedimentary bedrock. Majority of these soils are considered Orthent Entisols (Lithic Udorthents) due to the lack of soil development and shallow depth to weathering bedrock.	1, 4, 5, 11, 13 and 14.
		Soil Unit 1B: Dystrudepts	Sub-dominant: Highly leached acidic soils with weak to moderate structured uniform clay textures down the profile. These soils tend to be deeper than 1A profiles and accumulate iron oxides in the upper layers due to leaching and high acidity. These soils are considered Udept Inceptisols.	10, 12
	Aro - Low branching parallel ridges with very steep slopes and uniform textured acid soils with altered B horizons. Intervening alluvial flats with acid fine textured soils.	Soil Unit 1C: Dystrochrepts	Moderately deep weathered clay loam to clay soils, often mottled with moderate structure in the upper layers trending to massive structure with depth. Neutral to strongly acid soils with altered B horizons.	6, 7
Valleys, ravines and drainage lines	Vailala - Alluviated basin plains with strong gleyed to non gleyed undifferentiated alluvial soils.	Soil Unit 1D: Sulfaquents	Saturated massive gleyed clays with high pyrite levels partially oxidizing at the surface, potentially causing the release of acidic solutions into drainage lines. This soil was only observed in one isolated location in PRL15 along a tributary of Kuku Creek (Site 9).	9

Terrain Feature	Land System Description (CSIRO 1969)	Soil Complex and Soil Unit Label	General Soil Description	Representative Sites
Soil Complex 2: Aggradational, Alluvial Plains				
Alluvial flood plains and meander tracts	Hepea - Stable alluvial plains with non gleyed fine and medium textured undifferentiated alluvial soils and minor strongly gleyed fine textured alluvial soils.	Soil Unit 2A: Sulfaquents	Weak to moderately structured sandy clay loams trending to partially saturated clay soils. These are potential acid sulfate soils as observed at Site 22A where periodic river water inundation and drainage appears to have caused partial oxidation of the subsoil.	22, 22A
		Soil Unit 2B: Dystrudepts	Dominant: Moderately structured sandy clay loam soils grading to more clay textures with depth. These soils are young depositional soils, with some pedological development, often containing some gravel and often show signs of periodic saturation. Both duplex and gradational texture changes were observed.	2, 3, 15
		Soil Unit 2C: Psammaquents	Structureless uniform sands and silty sands deposited upon drainage banks and creeklines. These soils often overlie a clay dominant bedrock and are considered Psammaquent Entisols due to their undeveloped pedology.	8
Soil Complex 3: Aggradational, Littoral Plains				
Beach ridges and beach plains	Araimiri - Beach ridges and swales with gleyed undifferentiated sandy soils locally with neutral dark topsoils and littoral woodland largely replaced by coconut trees and gardens.	Soil Unit 3A: Psammaquents	Weak structured to structureless deep sands, with occasional sandy loams developed in the epipedon due to higher organic matter and some concentration of silt. These soils are typical beach sand profiles found in the beach ridges and beach plains of the coastal fringe.	16, 17, 18, 19, 20, 21,

Terrain Feature	Land System Description (CSIRO 1969)	Soil Complex and Soil Unit Label	General Soil Description	Representative Sites
	Malalaua - Beach plains and degraded beach ridges with undifferentiated, mainly sandy soils, and minor undifferentiated alluvial soils. Tall large crown forests locally replaced by coconut trees and gardens.	Soil Unit 3B: Psammaquents	Weakly structured to structureless sands and sandy clay loams with watertables within 0.60 m of the surface.	23, 24, 25, 26, 27
Soil Complex 4: Aggradational, Inundated Plains and Swamps				
Tidal flats and freshwater swamps	Alele, Nipa, Purari, Murva, Ebala and Karama - Tidal flats below the mean high water mark, strongly gleyed fine to medium textured undifferentiated 'soft' alluvial swamp soils.	Soil Unit 4A: Histosols and Hydraquents	Inundated organic soils and undifferentiated soft alluvial swamp soils. These soils occur below the mean high water mark of either seawater, brackish water or freshwater.	No Samples

† No samples were taken in Soil Complex 4 due to access constraints (with these soils being largely underwater) and risks from crocodiles



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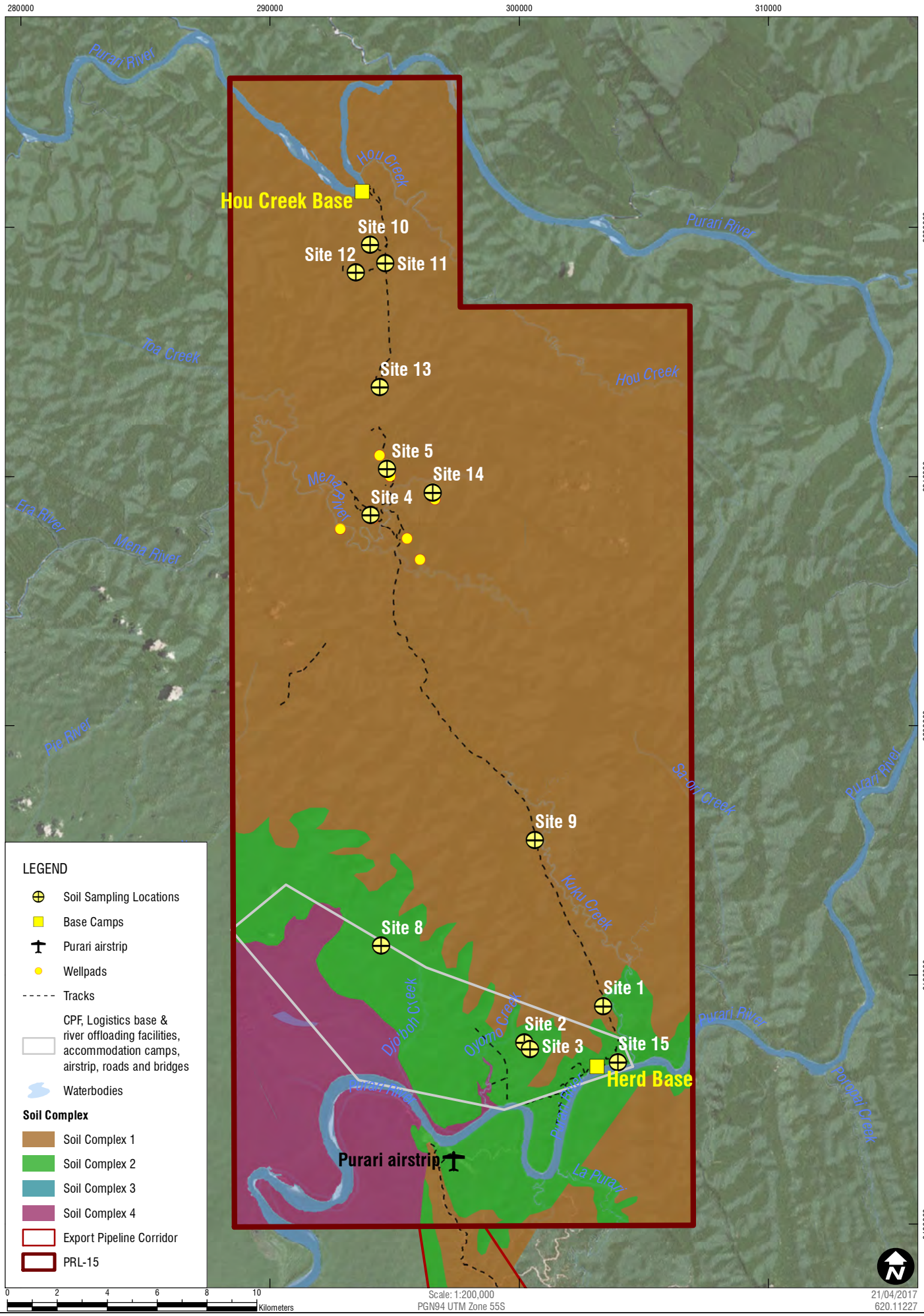
Soil Complex Map of the Study Area

FIGURE 12



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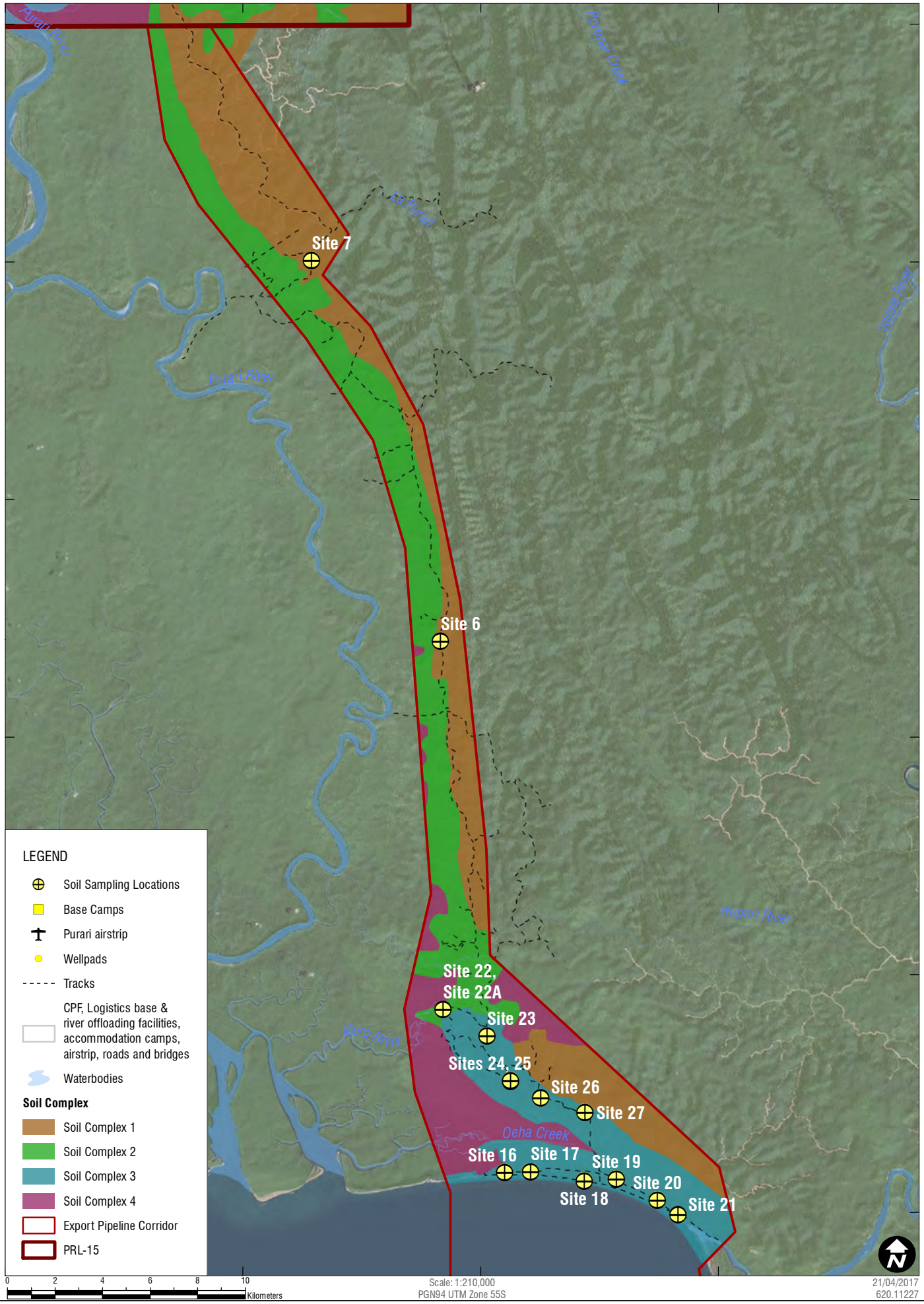
Soil Complex Map - PRL-15

FIGURE 13



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Soil Complex Map - Onshore Export Pipeline Corridor

FIGURE 14

As shown in the soil complex maps, the study area is dominated by Entisol and Inceptisol soil orders of Soil Complex 1 and 2. These are considered poorly formed soils with no to limited soil pedological development due to either the young age of the soil as in the depositional profiles of the drainage lines and alluvial plains (Soil Complex 2) (and the beach ridges and beach plains which contain Entisol soils of Soil Complex 3) or due to erosional factors in the hill areas in PRL-15 and the eastern portion of the onshore export pipeline corridor, preventing soil from developing over the bedrock parent material (Soil Complex 1).

The inundated tidal flats, swamps and saturated alluvial soils are dominated by Histosol soils of Soil Complex 4, which typically form under saturated conditions and have high organic matter in the upper layers. The representative soil types within the study area are detailed below with field survey sites included to provide examples of the ground-truthed soil profile.

6.3.3 Entisols

The central concept of Entisols is that of soils that have little or no evidence of the development of pedogenic horizons. Most Entisols have no diagnostic horizons other than an ochric epipedon.

On many landscapes the soil material is not in place long enough for pedogenic processes to form distinctive horizons. Some of these soils are on steep, actively eroding slopes, and others are on flood plains or glacial outwash plains that receive new deposits of alluvium at frequent intervals. Some Entisols are old enough to have formed diagnostic horizons, but they consist mostly of quartz or other minerals that are resistant to the weathering needed to form diagnostic horizons.

Entisols are defined by having any mineral parent material, vegetation, age, or moisture regime and any temperature regime, but they do not have permafrost. The only features common to all soils of the order are the virtual absence of diagnostic horizons and the mineral nature of the soils.

The Entisols present in the study area include:

- Soil Unit 1A – Lithic Udorthents in the hillslopes and crests of the hills within the ridge and ravine landforms, represented by sites 1, 4, 5, 11, 13 and 14;
- Soil Unit 1D – Sulfaquents in the valleys, ravines and drainage lines within the ridge and ravine landforms, represented by site 9;
- Soil Unit 2A – Sulfaquents in the floodplains and meander tracts of the alluvial plains, represented by site 22 and 22A;
- Soil Unit 2C – Psammaquents in the flats, open depressions and drainage lines of the alluvial plains, represented by site 8;
- Soil Unit 3A – Psammaquents along the beach ridges, represented by sites 16, 17, 18, 19, 20, 21; andSoil Unit 3B – Psammaquents in the beach plains and beach ridges, represented by sites 23, 24, 25, 26, and 27.Selected soil profiles presented in **Table 14** to **Table 22** below provide a representation of each Entisol unit. Profiles for all sites are presented in **Appendix A**.

6.3.4 Inceptisols

The central concept of Inceptisols is that of soils that occur in cool to very warm, humid and sub-humid regions and that have a cambic horizon and an ochric epipedon. The order of Inceptisols includes a wide variety of soils. In some areas Inceptisols are soils with minimal development, while in other areas they are soils with diagnostic horizons that merely do not conform to the criteria of the other soil orders. These soils range from very poorly drained to excessively drained.

Inceptisols occur from equatorial to tundra regions. Inceptisols commonly occur on landscapes that are relatively active, such as mountain slopes, where erosional processes are actively exposing unweathered materials, and river valleys, where relatively unweathered sediments are being deposited. If the precipitation exceeds the potential evapotranspiration every month, Inceptisols occur in areas of old as well as young surfaces or deposits. If the soil temperature regime is frigid or cryic in these humid regions, Inceptisols form mainly in the more loamy and clayey parent materials and Spodosols and Entisols (Psamments) form in the sandy materials.

The Inceptisols present in the study area include:

- Soil Unit 1B – Dystrudepts in the hillslopes and crests of the hills within the ridge and ravine landforms, represented by sites 10 and 12;
- Soil Unit 1C – Dystrochrepts in the lower relief hillslopes and crests along the proposed export pipeline corridor within the ridge and ravine landforms, represented by sites 6 and 7.
- Soil Unit 2B – Dystrudepts in the valleys and drainage lines within the alluvial plains, represented by sites 2, 3 and 15.

Selected soil profiles presented in Tables 14 to 22 below provide a representation of each Inceptisol unit. Profiles for all sites are presented in **Appendix A**.

6.3.5 Histosols

Histosols have high organic matter content in the upper 0.8 m of the soils. The amount of organic matter is at least 20 to 30 percent in more than half of this thickness, or the horizon that is rich in organic matter rests on rock or rock rubble. Most Histosols are saturated year round, but a few are freely drained, Histosols are commonly called bogs, moors, peats or mucks. Histosols form in decomposed plant remains that accumulate in water, forest litter, or moss faster than they decay.

The soil mapping by CSIRO (1969) and PNGRIS show the tidal flats, saturated alluvial soils of the Purari delta and the inland swamps are typically dominated by Histosols and Hydraquents. These areas are generally saturated year round. No sampling of soils in these areas was possible during the November 2016 survey due to the complexities and physical hazards of accessing these sites. Soil Complex/unit 4A – Histosols and Hydraquents have been mapped in the soil complex map presented in Figure 25 based on CSIRO (1969) and PNGRIS soil mapping.

6.3.6 Representative Soil Unit Profiles

The soil profiles presented in Tables 14 to 22 below provide a representative example of each soil unit. All inspected soil profiles are provided in **Appendix A**.

Table 14 Detailed Description: Entisol – 1A Lithic Udorthent

USDA Name	1A - Lithic Udorthent
Soil Order	Entisol
Site No.	14 (ANT-6)
Lat/Long (WGS84)	-7.14898/145.15753
Geology	Sandstone Laminite
Landform Pattern	Hills
Landform Element	Hillslope
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	4.0%
Slope Type	Simple
Surface Coarse Fragments	Nil
Surface Condition	Organic matter cover
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Road cutting
Current Land Use	Regrowth beside road

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.20	Light brown light clay, moderate structure of 10-20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), very strongly acidic (pH 5.0), moderate CEC and non-sodic (ESP 1.0%). Stable aggregates (Emerson 4). Very high organic matter (5.5%) and very high organic carbon (3.2%). Nil mottling 10-20% weathered laminate mudstones, nil segregations, gradual and even boundary.
	B22 0.20 – 0.60	Light brown medium clay, moderate structure of 20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), very strongly acidic (pH 4.8 to 4.7), moderate CEC and non-sodic (ESP 1.4 to 1.8%). Stable aggregates (Emerson 4). Very low to low organic matter (0.9 to 1.7%) and very low to low organic carbon (0.5 to 1.0%). Nil mottling, 40% mudstones, nil segregations, gradual and even boundary.
	C 0.60 +	Weathering shale/laminite.

Table 15 Detailed Description: Inceptisol – 1B Dystrdept

USDA Name	1B - Dystrudept
Soil Order	Inceptisol
Site No.	10 (Elk-2)
Lat/Long (WGS84)	-7.05908/145.13529
Geology	Sedimentary (Claystone)
Landform Pattern	Hills
Landform Element	Lower Hillslope
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	25%
Slope Type	Simple
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Nil
Current Land Use	Forest adjacent regrowth on cleared track.

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.30	Reddish brown light clay, moderate structure of 20 mm smooth faced crumb to sub angular blocky shaped peds, and weak to moderate consistence. Non-saline (ECe<2), very strongly acidic (pH 4.9 to 4.7), very low CEC and non-sodic to marginally sodic (ESP 1.7 to 7.1%). Stable aggregates (Emerson 4). Low to high organic matter (1.4 to 3.2%) and low to high organic carbon (0.6 to 1.8%). Nil mottling, nil stone content, nil segregations, gradual and irregular boundary.
	B22 0.30 – 1.20	Reddish brown medium clay, moderate structure of 20-50 mm smooth faced angular blocky shaped peds, and weak to moderate consistence. Non-saline (ECe<2), very strongly acidic (pH 4.8 to 4.7), Very low CEC and marginally sodic to sodic (ESP 7.2 to 9.2%). Stable aggregates (Emerson 4). Very low organic matter (0.9 to 1.0%) and very low organic carbon (0.5 to 0.6%). Nil mottling, nil stone content and nil segregations.

Table 16 Detailed Description: Inceptiosol – 1C Dystrochrept

USDA Name	1C - Dystrochrept
Soil Order	Inceptisol
Site No.	7 (Fly Camp B)
Lat/Long (WGS84)	-7.50458/145.21363
Geology	Sedimentary (Mudstone)
Landform Pattern	Hills
Landform Element	Crest/Upper Hillslope
Land System (CSIRO 1969)	Aro
Dominant Slope (%)	12%
Slope Type	Crest
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Nil
Current Land Use	Active roadside cutting

Profile	Horizon / Depth (m)	Soil Description
	B 0.0 – 1.20	Brownish yellow silty clay, moderate structure of 20 mm smooth faced irregular shaped peds, and weak consistence. Non-saline (ECe<2), strongly to very strongly acidic (pH 5.1 to 4.8), moderate to high CEC and non-sodic (ESP 0.7 to 3.8%). Stable aggregates (Emerson 4). Moderate organic matter (1.7 to 2.5%) and moderate organic carbon (1.0 to 1.5%). 50% faint contrast orange/grey mottling, 20% 20 mm weathered mudstones and nil segregations.

Table 17 Detailed Description: Entisol – 1D Sulfaquent

USDA Name	1E - Sulfaquent
Soil Order	Entisol
Site No.	9 (Kuku Creek tributary)
Lat/Long (WGS84)	-7.27525/145.19418
Geology	Sedimentary (Claystone)
Landform Pattern	Alluvial
Landform Element	Creekbank
Land System (CSIRO 1969)	Vailala
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Poor
Permeability	Very poor
Site Disturbances	Existing cleared track
Current Land Use	Disused track clearing

Profile	Horizon / Depth (m)	Soil Description
	B 0.0 – 1.20	Grey silty clay, massive structure with smooth fabric, and moderate consistence. Non-saline (ECe<2), neutral to moderately acidic (pH 6.9 to 6.0), moderate to high CEC and non-sodic (ESP 0.2 to 0.4%). Stable aggregates (Emerson 4). Moderate to high organic matter (2.2 to 3.5%) and moderate organic carbon (1.3 to 2.0%). 50% distinct orange mottling, nil stones and nil segregations.

Table 18 Detailed Description: Entisol – 2A Sulfaquent

USDA Name	2A - Sulfaquent
Soil Order	Entisol
Site No.	22 (Fly Camp F riverbank)
Lat/Long (WGS84)	-7.78997/145.26257
Geology	Sedimentary (Claystone)
Landform Pattern	River flat
Landform Element	River bank
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Soft
Drainage	Poor
Permeability	Moderate
Site Disturbances	Edge of village
Current Land Use	River access

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.40	Yellowish brown light clay, moderate sub angular blocky structure and moderate consistence. Non-saline (ECe<2), strongly acidic (pH 5.5 to 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Moderate to low organic matter (2.5 to 1.0%) and moderate to low organic carbon (1.4 to 0.6%). 20% orange and grey mottling, nil stone content nil segregations, gradual and even boundary.
	B22 0.40 – 1.00+	Light brown medium clay, massive structure and moderate consistence. Non-saline (ECe<2), slightly acidic (pH 6.5 to 6.3), high CEC and sodic (ESP 9.5 to 10.6%). Moderately stable aggregates (Emerson 3 and 8). Low to very low organic matter (1.2 to 0.9%) and low to very low organic carbon (0.7 to 0.5%). Nil mottling, nil stones and nil segregations. River flow waterlogging was noted. Brown color indicates oxidation of grey clay below.

Table 19 Detailed Description: Inceptisol – 2B Dystrudept

USDA Name	2B - Dystrudept
Soil Order	Inceptisol
Site No.	3 (CPF1)
Lat/Long (WGS84)	-7.35113/145.19216
Geology	Alluvial deposits
Landform Pattern	Alluvial back plain
Landform Element	Back plain
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0.0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Loose
Drainage	Poor to moderate
Permeability	High
Site Disturbances	Active clearing for survey access
Current Land Use	Natural forest

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.10	Brown sandy clay loam, moderate structure of 10-20 mm sub angular blocky rough peds, and moderate consistence. Non-saline (ECe<2), strongly acidic (pH 5.4), low CEC and non-sodic (ESP 0.7%). 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Moderate organic matter (3.0%) and moderate organic carbon (1.7%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B21 0.10 – 0.40	Brown sandy clay loam, moderate structure of 10-20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), strongly acidic (pH 5.1), low CEC and non-sodic (ESP 1.8%). 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Very low organic matter (0.9%) and very low organic carbon (0.5%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B22 0.40 – 1.10	Dark yellowish brown sandy clay loam, moderate structure of 10-20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), strongly acidic (pH 5.4 to 5.4), moderate CEC and non-sodic (ESP 1.9 to 2.2%). 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Extremely low organic matter (<0.5%) and Very low organic carbon (<0.5%). Nil mottling, nil stone content and nil segregations.

Table 20 Detailed Description: Entisol – 2C Psammaquent

USDA Name	1D - Psammaquent
Soil Order	Entisol
Site No.	8 (Fly Camp D)
Lat/Long (WGS84)	-7.31336/145.13815
Geology	Sedimentary (Claystone)
Landform Pattern	Alluvial
Landform Element	Creek bank
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Soft
Drainage	Well
Permeability	Well
Site Disturbances	Cleared fly camp
Current Land Use	Decommissioned fly camp site in natural forest

Profile	Horizon / Depth (m)	Soil Description
	B 0.0 – 1.20	Dark brown sandy clay loam, apedal structure with small layers of weak pedality of 10-20 mm rough faced blocky shaped peds, and weak consistence. Non-saline (ECe<2), neutral to moderately acidic (pH 6.6 to 5.8), moderate to high CEC and non-sodic (ESP 0.1 to 0.3). 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Moderate organic matter (1.7 to 2.6%) and moderate organic carbon (1.0 to 1.6%). Nil mottling, nil stones and nil segregations.

Table 21 Detailed Description: Entisol – 3A Psammaquent

USDA Name	3A - Psammaquent
Soil Order	Entisol
Site No.	17 (Harevavo Lagoon)
Lat/Long (WGS84)	-7.85165/145.29578
Geology	Unknown
Landform Pattern	Beach
Landform Element	Back plain
Land System (CSIRO 1969)	Araimiri
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Loose
Drainage	Well
Permeability	Well
Site Disturbances	Village area
Current Land Use	Lagoon access

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 1.00	Pale grey beach sand, apedal structure and very weak consistence. Non-saline (ECe<2), neutral (pH 7.1), very low CEC and non-sodic (ESP 1.2%). 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable sand aggregates (Emerson 8). Low organic matter (1.4%) and low organic carbon (0.8%). Nil mottling, nil stone content and nil segregations.

Table 22 Detailed Description: Entisol – 3B Psammaquent

USDA Name	3B - Psammaquent
Soil Order	Entisol
Site No.	23 (Track from Fly Camp F to Paevera)
Lat/Long (WGS84)	-7.79996/145.27930
Geology	Sedimentary
Landform Pattern	Beach plains
Landform Element	Alluvial flats
Land System (CSIRO 1969)	Malalaua
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Mulched
Drainage	Poor
Permeability	Moderate
Site Disturbances	Previous roadway
Current Land Use	Native forest and regrowth

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.40	Yellowish brown sandy clay loam, weak sub-angular blocky structure and weak consistence. Non-saline (ECe<2), slightly acidic to moderately acidic (pH 6.4 to 6.0), very low to low CEC and non-sodic (ESP 0.6 to 2.3%). 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Moderate organic matter (1.7 to 2.8%) and moderate organic carbon (1.0 to 1.6%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B2 0.40 – 1.00+	Yellowish brown loamy sand, weak crumb structure, sandy fabric and weak consistence. Non-saline (ECe<2), slightly to moderately acidic (pH 6.2 to 5.8), low CEC and non-sodic (ESP 2.4 to 3.0%). 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Extremely low organic matter (<0.5%) and extremely low organic carbon (<0.5%). Nil mottling, nil stones and nil segregations. Ground water seepage at 0.6 m.

6.3.7 Land Capability Assessment

The land capability assessment has been applied to the four separate soil complexes described in **Table 13** above, with the definitions of each USDA land capability class provided in **Section 5.4.4**.

Soil Complex 1: Land Capability Class VIII – This soil complex consists of the ridge and ravine terrain including the hillslopes, crests, steep valleys and drainage lines located in PRL-15 and majority of the eastern side of the proposed export pipeline corridor south of PRL-15, upon hilly and ridge terrain. The dominant soils include shallow Lithic Udorthents, Dystrdepts and Drystrochrepts in the hillslopes and ridges, and Psammaquents and sulfaquents in the valleys and drainage lines. The nature of this soil complex results in a number of hazards and limitations associated with agricultural pursuits including; shallow unstable soil profiles, steep inaccessible terrain, erosive soils, water deficiency and water saturation in various topographies, and areas of high acidity. These factors mean the classification of this land capability is Class VIII, meaning the soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply catchment or to aesthetic purposes according to the USDA land capability classification.

Soil Complex 2: Land Capability Class VI and VII – This soil complex consists of the alluvial plains and meander tracts in the south-western corner of PRL-15 and along the western edge of the proposed pipeline corridor south of PRL-15 upon the flatter terrain below the ridgeline. The dominant soils are alluvial Dystrudepts and Sulfaquents. Whilst these soils are considered stable, there are potential acid issues associated with the disturbance or drainage of the Sulfaquents. There are also limitations due to periodic saturation and groundwater within 0.5 m to 1.0 m of the surface where the sandy loams and sandy clay loams overlie the higher clay content subsoils. The field investigations noted many subsistence gardens and tree crops within this soil complex, however it was observed these were restricted to high human intervention efforts in creating artificial drainage and compost mounding to assist plant growth. The land capability of this soil complex is considered Class VI and VII, meaning the soils have severe to very severe limitations that make them unsuitable to broadscale cultivation and that restrict their use largely to grazing, woodland or wildlife according to the USDA land capability classification system.

Soil Complex 3: Land Capability Class VII and VIII – This soil complex consists of the littoral plains including the beach ridges and beach plains along the coast in the proposed export pipeline corridor. The dominant soils are Psammaquents consisting of weak structured to structureless deep sands and sandy clay loams with high watertables. Some of these soils may also be potentially acid-producing if drained or disturbed. These soils have inherent limitations for traditional agriculture including; lack of water holding capacity within the sandy profiles, even though shallow watertables can cause periodic saturation of these layers; salt water ingress, lack of structure, clay and organic matter causing low cation exchange capacity; and potential high acid levels due to PASS. The land capability of this soil complex is considered Class VII and VIII, meaning the soils have very severe limitations that make them unsuitable for broadscale cultivation and that restrict their use largely to minor grazing, woodland, wildlife or recreation activities according to the USDA land capability classification system.

Soil Complex 4: Land Capability Class VIII – This soil complex consists of the inundated plains and swamps including the tidal flats along the coast and Purari delta in small sections of the proposed export pipeline corridor. The dominant soils are Histosols and Hydraquents consisting of inundated organic soils and undifferentiated soft alluvial swamp soils. These soils reside below the mean high water mark, and are considered PASS given the position in the landscape. The dominant limitation of these soils for use in agriculture is the fact they remain inundated for the majority of time. The land capability of this soil complex is considered Class VIII, meaning the soils have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply catchment or to aesthetic purposes according to the USDA land capability classification.

It must be reiterated that whilst these soil complexes appear significantly limited in their capability for traditional 'western' agriculture given the classifications above, the people who reside in the villages within these areas manage to grow woodland tree crops of sago, coconut, papaya, betel nut, and mustard, and other food crops such as potatoes, melons, pineapple, passion fruit, bananas etc. and have done so successfully for many generations.

6.3.8 Potential Acid Sulfate Soils Screening

The results of potential acid sulfate soil (PASS) screening tests on 22 samples from 9 targeted sites indicate that the study area contains several soil units which may be prone to releasing sulfuric acid if disturbed or drained. The results of the screening tests are shown in **Table 23** below, and assessment criteria described in **Section 5.4.5**.

Table 23 Acid Sulfate Soil Field Screening Analysis

Sample Reference	pH_F	pH_{FOX}	Reaction Rate		Potential Acid Sulfate Soil (PASS)
Site 9: 0 - 10	4.5	4.1	3	High	Limited Potential
Site 9: 20 - 30	6.4	4.4	4	Very Vigorous	High Potential
Site 9: 50 - 60	6.1	3.7	4	Very Vigorous	High Potential
Site 9: 90 - 100	6.6	3.9	4	Very Vigorous	High Potential
Site 15: 130 - 140	6.2	5.2	3	High	Limited Potential
Site 15: 160 - 170	6.3	6.2	4	Very Vigorous	Limited Potential
Site 17: 0 - 10	6.4	5.1	2	Moderate	Limited Potential
Site 18: 0 - 10	6.9	2.4	3	High	High Potential
Site 19: 50 - 60	7.1	3.4	3	High	High Potential
Site 22: 0 - 10	5.6	3.8	3	High	High Potential
Site 22: 20 - 30	5.8	3.9	3	High	High Potential
Site 22: 50 - 60	6.8	4.5	3	High	High Potential
Site 22: 90 - 100	6.6	4.6	3	High	High Potential
Site 22A: 90 - 100	6.2	3.3	3	High	High Potential
Site 23: 0 - 10	6.3	3.9	4	Very Vigorous	High Potential
Site 23: 20 - 30	6.3	4.7	3	High	High Potential
Site 23: 50 - 60	6.0	5.0	4	Very Vigorous	Limited Potential
Site 23: 90 - 100	6.1	5.2	3	High	Limited Potential
Site 27: 0 - 10	5.8	3.6	4	Very Vigorous	High Potential
Site 27: 20 - 30	5.9	4.2	3	High	High Potential
Site 27: 50 - 60	5.7	4.1	3	High	High Potential
Site 27: 90 - 100	6.5	4.6	2	Moderate	High Potential

The ASS screening test indicated the potential for ASS to be present at seven out of nine sites tested. These results should not be taken as the actual presence of ASS, but rather indicate that there is potential for ASS. With the exception of site 9, the sites which indicate PASS are located on the alluvial flood plains, beach ridges and beach plains within the coastal extents of the study area. Site 9 is located in PRL-15 along a saturated drainage line associated with Kuku Creek. The Psammaquents and Sulfaquents of soil complexes 2 and 3 were the soil units typically indicating PASS. Site 9 is located in Soil Complex 1, however is also considered a Sulfaquent and indicated PASS in the subsoil layers.

Whilst no samples were taken in Soil Complex 4 due to access constraints (with these soils being largely underwater) and risks from crocodiles, it is feasible to assume the presence of PASS in these soils based on known physical features of the landform. This includes saturated soils in coastal margins and geomorphology developed from the Holocene epoch, when sea water levels were higher, bringing sulfates into the present day coastal soils. The risk of PASS being present in the majority of coastal soils within the study area is therefore considered high.

The SPOCAS testing undertaken on selected samples at sites 9, 22 and 22A showed the subsoil layers to have a moderate net acidity rating above 19 mole H^+/t. A net acidity result above 19 mole H^+/t of soil is the accepted trigger level that indicates a requirement for a detailed ASS assessment in the proposed disturbance area, where ASS are suspected (NSW RTA 2005).

Table 24 SPOCAS Test Results

Sample	Net Acidity	Net Acidity	Liming Rate
	mole H+ / t	Rating	kg $CaCO_3$/t
Site 9: 0-10	<10	Low	<1
Site 9: 20-30	<10	Low	<1
Site 9: 50-60	33	Moderate	2
Site 9: 90-100	34	Moderate	2
Site 22: 90-100	21	Moderate	2
Site 22A: 90-100	60	Moderate	4

6.3.9 Soil Metals Screening

The metals analysis results are shown in **Table 25**, with laboratory reports provided in **Appendix B**. Analyses were undertaken on both the 'whole' soil sample and the <63 µm fraction (representing clays, silts and some fine sands). The <63 µm fraction is considered the higher risk fraction transferred via dermal adherence and leading to ingestion (Beamer *et al*. 2012). This fraction is also more susceptible to water and wind erosion and therefore transport if the soil is disturbed and exposed. Additionally, metal concentrations are usually highest in finer sized particles due to the greater surface area available for metal adsorption. Adopting a conservative approach, metal concentrations in the 63 µm fraction were compared with US EPA Ecological Soil Screening Levels (Eco-SSLs) and the NEPM (2013) health-based investigation levels for residential soils used to grow home produce of fruits and vegetables described in **Section 5.4.6**.

Table 25 Soil Metals Screening – 63 µm Fraction

Metal	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Selenium	Silver	Strontium	Tin	Vanadium	Zinc	Mercury
Units	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Limit of Reporting	**50**	**5**	**10**	**1**	**50**	**1**	**2**	**2**	**5**	**50**	**5**	**5**	**2**	**5**	**2**	**2**	**5**	**5**	**5**	**0.1**
Site 1: 0 - 10	36400	12	40	<1	<50	<1	88	35	47	72400	12	986	66	<5	<2	65	<5	129	101	<0.1
Site 1: 20 - 30	36200	15	80	1	<50	<1	87	35	51	102000	13	4560	76	<5	<2	93	<5	154	96	<0.1
Site 3: 0 - 10	23000	<5	100	<1	<50	<1	38	22	25	30400	7	886	23	<5	<2	33	<5	74	74	<0.1
Site 3: 20 - 30	27000	<5	70	<1	<50	<1	43	22	26	36200	6	733	26	<5	<2	17	<5	78	70	<0.1
Site 3: 50 - 60	38100	<5	130	<1	<50	<1	65	16	47	54800	8	290	42	<5	<2	21	<5	100	81	<0.1
Site 3: 90 - 100	35900	<5	130	<1	<50	<1	67	17	52	49400	8	203	48	<5	<2	25	<5	102	79	<0.1
Site 5: 0 - 10	31700	10	30	<1	<50	<1	45	19	33	49400	11	533	42	<5	<2	18	<5	70	86	<0.1
Site 5: 20 - 30	31600	11	30	<1	<50	<1	45	19	35	52300	12	582	43	<5	<2	17	<5	70	88	<0.1
Site 5: 50 - 60	32400	12	40	<1	<50	<1	45	20	38	49600	12	613	42	<5	<2	22	<5	74	88	<0.1
Site 5: 90 - 100	32500	12	40	<1	<50	<1	46	20	46	57900	13	696	47	<5	<2	20	<5	74	94	<0.1
Site 6: 0 - 10	24800	5	140	<1	<50	<1	50	20	48	42900	9	850	41	<5	<2	82	<5	78	89	<0.1
Site 6: 20 - 30	24300	<5	110	<1	<50	<1	49	17	31	42800	7	476	39	<5	<2	55	<5	76	75	<0.1
Site 6: 50 - 60	26900	5	80	<1	<50	<1	54	16	41	48200	8	282	40	<5	<2	48	<5	78	87	<0.1
Site 6: 90 - 100	28700	6	70	<1	<50	<1	61	16	38	54900	8	224	41	<5	<2	45	<5	90	79	<0.1
Site 7: 0 - 10	16400	<5	40	<1	<50	<1	30	5	31	27600	8	72	9	<5	<2	39	<5	41	31	<0.1
Site 7: 20 - 30	18500	<5	30	<1	<50	<1	33	4	34	29300	8	42	9	<5	<2	39	<5	43	30	<0.1
Site 7: 50 - 60	16900	<5	30	<1	<50	<1	31	4	26	30100	7	45	9	<5	<2	28	<5	48	32	<0.1
Site 7: 90 - 100	19500	<5	40	<1	<50	<1	34	5	29	27100	8	50	9	<5	<2	15	<5	45	36	<0.1
Site 8: 0 - 10	25400	9	40	<1	<50	<1	59	24	45	59800	11	819	56	<5	<2	48	<5	82	96	<0.1
Site 8: 20 - 30	25300	7	40	<1	<50	<1	60	21	44	60000	11	569	55	<5	<2	40	<5	82	92	<0.1
Site 8: 50 - 60	25300	8	40	<1	<50	<1	58	19	43	56100	10	559	54	<5	<2	41	<5	79	94	<0.1
Site 8: 90 - 100	26200	7	40	<1	<50	<1	62	20	43	60700	11	534	56	<5	<2	40	<5	85	96	<0.1
Site 9: 0 - 10	25600	8	40	<1	<50	<1	49	20	43	54800	12	570	49	<5	<2	34	<5	72	94	<0.1

Metal	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Selenium	Silver	Strontium	Tin	Vanadium	Zinc	Mercury
Units	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Limit of Reporting	**50**	**5**	**10**	**1**	**50**	**1**	**2**	**2**	**5**	**50**	**5**	**5**	**2**	**5**	**2**	**2**	**5**	**5**	**5**	**0.1**
Site 9: 20 - 30	26000	7	40	<1	<50	<1	49	20	42	51200	11	598	49	<5	<2	34	<5	71	96	<0.1
Site 9: 50 - 60	26200	10	40	<1	<50	<1	49	20	41	56600	11	482	48	<5	<2	31	<5	74	93	<0.1
Site 9: 90 - 100	25400	5	40	<1	<50	<1	48	20	35	52300	11	611	45	<5	<2	25	<5	75	90	<0.1
Site 10: 0 - 10	50000	<5	40	<1	<50	<1	52	6	28	80500	13	125	16	<5	<2	<2	<5	209	42	0.2
Site 10: 20 - 30	57800	<5	50	<1	<50	<1	54	6	34	97100	16	160	15	<5	<2	<2	<5	242	42	0.2
Site 10: 50 - 60	60800	6	60	<1	<50	<1	57	5	34	101000	19	215	15	<5	<2	<2	<5	241	39	0.1
Site 10: 90 - 100	56600	8	70	<1	<50	<1	65	5	36	108000	24	251	16	<5	<2	<2	<5	238	40	<0.1
Site 12: 0 - 10	30800	7	20	<1	<50	<1	38	8	40	58700	11	98	27	<5	<2	7	<5	84	67	<0.1
Site 12: 20 - 30	33600	7	20	<1	<50	<1	42	9	52	67600	13	134	32	<5	<2	8	<5	87	78	<0.1
Site 12: 50 - 60	30000	8	20	<1	<50	<1	37	12	48	69600	13	253	31	<5	<2	5	<5	78	73	<0.1
Site 12: 90 - 100	28800	<5	30	<1	<50	<1	40	10	45	36700	14	104	36	<5	<2	6	<5	76	74	<0.1
Site 14: 0 - 10	48100	6	80	<1	<50	<1	64	16	54	67100	12	289	37	<5	<2	11	<5	122	77	0.2
Site 14: 20 - 30	46000	6	100	<1	<50	<1	66	17	35	71300	12	214	38	<5	<2	9	<5	121	77	<0.1
Site 14: 50 - 60	35800	10	30	<1	<50	<1	51	22	39	74900	11	529	46	<5	<2	4	<5	77	90	<0.1
Site 15: 0 - 10	40100	<5	230	<1	<50	<1	55	23	36	64200	13	877	42	<5	<2	41	<5	129	89	<0.1
Site 15: 20 - 30	34300	9	220	1	<50	<1	45	36	48	73800	21	1580	40	<5	<2	48	<5	137	88	<0.1
Site 15: 50 - 60	28600	9	150	1	<50	<1	43	36	51	83000	20	1460	40	<5	<2	46	<5	121	91	<0.1
Site 15: 90 - 100	22200	9	130	<1	<50	<1	39	32	45	54100	18	1050	34	<5	<2	54	<5	109	90	<0.1
Site 15: 130 - 140	19900	8	80	<1	<50	<1	43	24	40	52000	13	704	34	<5	<2	65	<5	94	84	<0.1
Site 15: 160 - 170	22000	5	60	<1	<50	<1	37	14	30	46000	7	742	22	<5	<2	50	<5	86	71	<0.1
Site 17: 0 - 10	23500	5	30	<1	<50	<1	80	35	54	84300	14	1200	48	10	<2	14	<5	246	189	<0.1
Site 18: 0 - 10	25300	8	20	<1	<50	<1	58	21	53	58200	12	587	45	<5	<2	60	<5	101	109	<0.1
Site 19: 50 - 60	25300	7	30	<1	<50	<1	84	26	41	73900	12	1200	49	7	<2	22	<5	216	120	<0.1
Site 22: 0 - 10	22000	6	50	<1	<50	<1	47	17	35	44600	8	500	40	<5	<2	34	<5	68	83	<0.1
Site 22: 20 - 30	23400	6	40	<1	<50	<1	49	18	44	46600	9	404	46	<5	<2	29	<5	69	80	<0.1

Metal	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Selenium	Silver	Strontium	Tin	Vanadium	Zinc	Mercury
Units	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Limit of Reporting	**50**	**5**	**10**	**1**	**50**	**1**	**2**	**2**	**5**	**50**	**5**	**5**	**2**	**5**	**2**	**2**	**5**	**5**	**5**	**0.1**
Site 22: 50 - 60	22400	7	50	<1	<50	<1	49	17	43	47300	9	428	49	<5	<2	32	<5	68	84	<0.1
Site 22: 90 - 100	22200	6	50	<1	<50	<1	49	17	43	46200	9	414	48	<5	<2	34	<5	66	82	<0.1
Site 22A: 90 - 100	22600	5	50	<1	<50	<1	50	21	42	45200	10	332	48	<5	<2	32	<5	72	90	<0.1
Site 23: 0 - 10	63000	<5	190	<1	<50	1	129	32	38	110000	11	2500	32	11	<2	34	<5	385	123	0.2
Site 23: 20 - 30	95500	7	110	<1	<50	1	163	30	36	160000	12	1290	34	16	<2	<2	<5	510	107	0.1
Site 23: 50 - 60	43000	5	260	1	<50	<1	106	32	25	97500	13	1210	29	10	<2	12	<5	321	87	<0.1
Site 23: 90 - 100	28500	<5	140	<1	<50	<1	159	43	39	97400	14	1360	31	14	<2	<2	<5	357	110	<0.1
Site 27: 0 - 10	30800	<5	70	<1	<50	2	186	45	25	162000	11	1420	46	14	<2	<2	<5	616	176	<0.1
Site 27: 20 - 30	30200	5	70	<1	<50	2	193	48	26	182000	11	1080	49	11	<2	<2	<5	639	175	<0.1
Site 27: 50 - 60	29600	<5	60	<1	<50	2	191	43	26	168000	11	1040	49	10	<2	<2	<5	623	178	<0.1
Site 27: 90 - 100	27700	<5	60	<1	<50	1	181	31	33	134000	11	465	53	9	<2	15	<5	566	169	<0.1

The following observations have been made regarding the nature of the each metal tested in the sampling program, and background concentrations in comparison to the various thresholds. The majority of samples were well below the NEPM (2013) health based screening levels across all metals, however there was wide variation when compared to the US EPA Eco-SSLs. Most notable results were at sites 23 and 27, which were relatively high in chromium, selenium, vanadium and zinc.

Aluminum

Aluminum (Al) is a major component of almost all common inorganic soil particles, with the exceptions of quartz sand, chert fragments, and ferromanganiferous concretions. The typical range of aluminum in soils is from 1 percent to 30 percent (10,000 to 300,000 mg/kg) with naturally occurring concentrations varying over several orders of magnitude. The USEPA limits the value of Ecological Screening Levels (ESLs) for aluminum to soluble Al in soils less than 5.5 pH (USEPA 2003a), however, no ESL is provided for comparison. The soil test results show total aluminum to range between 16,400 mg/kg and 95,500 mg/kg, which is within the typical background range referenced above. It should be noted that high acid soil conditions will increase the available aluminum and may require further testing if PASS are disturbed.

Arsenic

Arsenic is naturally present in rock and soils with concentrations in soils reflecting the geology of the region as well as anthropogenic inputs. Higher concentrations are associated with igneous and sedimentary rocks, particularly with sulfidic ores (USEPA 2005a). The USEPA ESLs are 18 mg/kg for plants and 43 to 46 mg/kg for wildlife. The more recent NEPM guidelines (NEPM 2013) considers health based investigation levels to be 100 mg/kg. The soil test results ranged from <5 to 15 mg/kg which is lower than both the USEPA and NEPM thresholds.

Barium

Barium is a yellowish-white, soft metal that is strongly electropositive. In nature, barium occurs in a combined state, the principal forms being barite (barium sulfate) and witherite (barium carbonate). Barium is also present in small quantities in igneous rocks such as feldspar and micas and may also be found as a natural component of fossil fuel (USEPA 2005b). The USEPA Eco-SSLs for barium are 330 mg/kg for soil invertebrates and 2000 mg/kg for mammalian wildlife. The soil test results ranged from 20 to 260 mg/kg, which is lower than the USEPA Eco-SSL.

Beryllium

Beryllium occurs naturally in the earth's crust, in coal, and in minerals, such as beryl, bertrandite, bromellite, chrysoberyl, and beryllonite. Plagiocase feldspar contains most of the world's beryllium (USEPA 2005c). The Eco-SSLs for beryllium are 40 mg/kg for soil invertebrates and 21 mg/kg for mammalian wildlife. The NEPM (2013) health based investigation level is 60 mg/kg. The soil test results ranged from <1 to 1 mg/kg which is less than both the USEPA and NEPM thresholds.

Boron

Boron is concentrated by the water-solubility of its more common naturally occurring compounds, the borate minerals. The NEPM (2013) health based investigation level is 4,500 mg/kg. The soil test results showed all samples to be less than 50 mg/kg, which is well below the NEPM threshold. The results of the sampling program showed no noticeable trends for boron across the soil landscape or within soil profiles.

Cadmium

Cadmium is a naturally occurring rare element that does not have any known essential or beneficial biological function and is widely distributed in the earth's crust. Since it occurs naturally in the earth's crust, cadmium may also enter the atmosphere from the weathering of rocks, windblown soil, and volcanoes. However, these sources are minor compared with anthropogenic activities (USEPA 2005d). The USEPA ESL is 32 mg/kg for plants, and 140 mg/kg for soil invertebrates. The NEPM (2013) health based investigation level is 20 mg/kg. The soil test results ranged from <1 to 2 mg/kg, which is lower than both the USEPA and NEPM thresholds.

Chromium

In the natural environment, chromium occurs as two oxidation states or valences: chromium (III) and chromium (VI). Chromium speciation in soils is complex. Among the factors that affect the speciation of chromium in soil and water and its uptake into animals and plants include: organic matter content, ferrous ion content, redox state, and pH. In general, chromium (VI) is favored by higher pH, aerobic conditions, low amounts of organic matter and the presence of manganese and iron oxides, which oxidize chromium (III). Transformation of chromium (VI) to the trivalent form tends to occur in acidic, anoxic soils with high organic content. Chromium (III) is cationic and adsorbs onto clay particles, organic matter, metal oxyhydroxides, and other negatively charged particles in contrast to chromium (VI), which does not interact significantly with clay or organic matter. As a result, chromium (VI) is more water-soluble and mobile than chromium (III) (USEPA 2008).

The USEPA considers there to be inadequate data to derive ecological soil screening levels for plants and soil invertebrates. The NEPM health based investigation level is 100 mg/kg for chromium (VI) only. The soil test results are for total chromium, i.e., including chromium (III) and (VI) and ranged from 30 to 193 mg/kg, with two sites (site 23 and site 27) above the 100 mg/kg threshold for chromium (VI). Concentrations at these two sites were notably higher than the average concentration for chromium in world soils of 42 mg/kg provided in Alloway (2013). It is not known if this is related to anthropogenic activities or natural conditions.

Cobalt

Cobalt is a relatively rare element in the earth’s crust (0.0023%) and is usually found in association with other metals such as copper, nickel, manganese and arsenic. Release of cobalt to the environment occurs via soil and natural dust, seawater spray, volcanic eruptions, forest fires, and other continental and marine biogenic emissions. In the terrestrial environment, the availability of cobalt is primarily regulated by pH and is usually found in soils as divalent cobalt. At low pH it is oxidized to trivalent cobalt and often found associated with iron. Adsorption of divalent cobalt on soil colloids is high between pH 6 and 7, whereas leaching and plant uptake of cobalt are enhanced by a lower pH. Soil pH is very important in cobalt uptake by plants and phytotoxicity. More acidic soils sorb cobalt less strongly (USEPA 2005e).

The Eco-SSLs for cobalt are 13 mg/kg for plants and 120 to 230 mg/kg for avian and mammalian wildlife, respectively. The NEPM health based investigation level is 100 mg/kg. The soil test results ranged from 4 to 48 mg/kg. These values are less than the 100 mg/kg threshold from the NEPM 2013, and the wildlife threshold of the USEPA, however 47 of the 59 samples tested are considered above the USEPA Eco-SSL for plants.

Copper

In soils, copper may be present as soluble compounds including nitrates, sulfates, and chlorides, and insoluble compounds such as oxides, hydroxides, carbonates, and sulfides. Soluble copper compounds strongly sorb to particles of organic matter, clay, soil, or sand, and demonstrate low mobility in soils. Insoluble copper compounds are solid salts and are effectively immobile in soils. Most copper compounds have a high melting point and low vapor pressure, and are not expected to volatilize from moist or dry soil surfaces (USEPA 2007a).

The Eco-SSLs for copper are 70 mg/kg for plants, 80 mg/kg for soil invertebrates and 28 and 49 mg/kg for avian and mammalian wildlife, respectively. The NEPM health based investigation level is 6,000 mg/kg. The soil test results ranged from 25 to 54 mg/kg, which is less than the USEPA plant and soil invertebrate Eco-SSLs and NEPM thresholds. However, 51 of the 59 samples were above the avian Eco-SSL and 7 samples were above the mammalian Eco-SSL.

Iron

Iron is a commonly occurring metallic element, with typical soil concentrations ranging from 0.2% to 55% (20,000 to 550,000 mg/kg). Concentrations can vary significantly even within localized areas due to soil types and presence of other sources. Iron can occur in either the divalent (Fe +2) or trivalent (Fe +3) valence states under typical environmental conditions. The valence state is determined by the activity of hydrogen ions (pH) and the activity of electrons (Eh) of the system, and the chemical form is dependent upon the availability of other chemicals. The main concern from an ecological risk perspective for iron is not direct chemical toxicity, but the effect of iron as a mediator in the geochemistry of other (potentially toxic) metals and the potential physical hazard of depositing flocculent (US EPA 2003b).

Iron values ranged from 30,400 to 102,000 mg/kg in the sample results, with no notable trends either across the landscape or within soil profiles.

Lead

Lead is a naturally occurring element which can be found in all environmental media: air, soil, sediment, and water. Lead in soil is relatively immobile and persistent whether added to the soil as halides, hydroxides, oxides, carbonates, or sulfates. When released to soil, lead is normally converted from soluble lead compounds to relatively insoluble sulfate or phosphate derivatives. It also forms complexes with organic matter and clay minerals, which limits its mobility. The efficient fixation of lead in soils limits the transfer of lead to aquatic systems. However, leaching of lead can be relatively rapid from some soils, especially at highly contaminated sites or landfills. Lead is most available from acidic sandy soils which contain little material capable of binding lead. Concentrations of lead in soil solution reach a minimum between pH 5 and 6 because metal-organic complexes form in this pH range (USEPA 2005f).

The Eco-SSLs for lead are 120 mg/kg for plants, 1,700 mg/kg for soil invertebrates and 11 to 56 mg/kg for avian and mammalian wildlife, respectively. The NEPM health based investigation level is 300 mg/kg. The soil test results ranged from 6 to 24 mg/kg, which is less than the USEPA plant, soil invertebrate and mammalian Eco-SSLs and NEPM thresholds. However, concentrations in 26 samples were above the avian Eco-SSL.

Manganese

Manganese is one of the most abundant trace elements in the lithosphere and is widely distributed in the environment in over 100 minerals, including various sulfides, oxides, carbonates, silicates, phosphates, and borates. Manganese compounds are important soil constituents. In soils, redox reactions affect the sorption of manganese compounds, which in turn have a considerable effect on soil properties such as cation exchange (USEPA 2007b).

The Eco-SSLs for manganese are 220 mg/kg for plants, 450 mg/kg for soil invertebrates and 4,300 and 4,000 mg/kg for avian and mammalian wildlife, respectively. The NEPM health based investigation level is 3,800 mg/kg. The soil test results ranged from 42 to 4,560 mg/kg. Only one sample from site 1 was above the NEPM, and the USEPA avian and mammalian thresholds. A total of 47 samples were above the plant Eco-SSL, and 37 samples were above the soil invertebrate Eco-SSL.

Nickel

Nickel is a naturally occurring element which can be found in all environmental media: air, soil, sediment, and water. Nickel occurs in numerous minerals as sulfides, arsenides, antimonides and oxides or silicates. In soils, nickel may be present as soluble compounds including chlorides and nitrates, and insoluble compounds such as oxides and sulfides. Soluble nickel compounds tend to exhibit greater mobility than insoluble nickel compounds. The degree of mobility is influenced by the formation of complexes in the presence of organic substances and sulfates. The distribution of nickel between solid and solution phases is primarily controlled by pH with secondary factors being clay content, and the amount of hydrous iron and manganese oxides. Soluble nickel increases with decreases in pH. Increases in metal loading and cation exchange capacity (CEC) increase the amount of metal adsorbed by soil (USEPA 2007c).

The Eco-SSLs for nickel are 38 mg/kg for plants, 280 mg/kg for soil invertebrates and 210 and 130 mg/kg for avian and mammalian wildlife, respectively. The NEPM health based investigation level is 400 mg/kg. The soil test results ranged from 9 to 76 mg/kg, which is less than the USEPA soil invertebrate avian and mammalian Eco-SSLs and NEPM thresholds. However, concentrations in 36 samples were above the plant Eco-SSL.

Selenium

Selenium is a naturally occurring element found in all environmental media: air, soil, sediment, and water. In nature it is found in the sulfide ores of heavy metals and also found in volcanic rock, sandstone, shale, carbonates, bedrock, coal oil, and mineral oil. Selenium may be released to the environment from natural sources such as volcanic eruptions, leaching and weathering of rocks, and volatilization as a result of biomethylation by plants and bacteria. In soils, the chemical forms of selenium are largely dependent on pH and oxidation-reduction potentials (USEPA 2007d).

The Eco-SSLs for selenium are 0.52 mg/kg for plants, 4.1 mg/kg for soil invertebrates and 1.2 and 0.63 mg/kg for avian and mammalian wildlife, respectively. The NEPM 2013 health based investigation level is 200 mg/kg. The majority of soil test results were less than 5 mg/kg (limit of detection), however 10 samples from 4 sites ranged from 7 to 16 mg/kg, which is above the USEPA Eco-SSLs. Concentrations at these sites were notably higher than the average concentration for selenium in world soils of 0.7 mg/kg provided in Alloway (2013). It is not known if this is related to anthropogenic activities or natural conditions.

Silver

Silver is a rare, naturally occurring metal, often found deposited as a mineral ore in association with other elements. In nature, silver compounds occur as halides, cyanide, thiocyanate, oxides, hydroxides, carbonates, nitrate, sulfate, sulfides, ferrocyanide complexes, and thiosulfate complexes. When released to soils, silver exists as Ag+ ions or as insoluble silver complexes. The behaviour of silver is strongly influenced by pH, redox conditions, and interactions with soil organic matter. Silver is highly immobile in soils relative to other metals. This immobility is due to precipitation of silver to form insoluble salts and adsorb to organic matter, clays, and manganese and iron oxides (USEPA 2006).

The Eco-SSLs for silver are 560 mg/kg for plants and 4.2 to 14 mg/kg for avian and mammalian wildlife, respectively. The soil test results were all below the 2 mg/kg limit of detection, which is lower than the USEPA Eco-SSLs.

Strontium

Strontium has one oxidation state (+2) and four naturally occurring isotopes. During magmatic processes, strontium is partitioned into mid stage fractionates, thus tends to be enriched in intermediate rocks (approximately 500 mg/kg) relative to granite (<300 mg/kg or mafic igneous rocks (<450 mg/kg). In sedimentary processes, the distribution of strontium is affected by strong adsorption on clay minerals, extensive substitution of Sr^{2+} for Ca^{2+} in carbonate minerals, and Sr^{2+} for Ba^{2+} in sulfate minerals (FOREGS 2017).

Strontium is easily mobilized during weathering, especially in oxidizing acid environments, and is incorporated in clay minerals and strongly fixed by organic matter. The strontium content in soil is highly controlled by parent rocks and climate and therefore its concentrations range from 50 to 1,000 mg/kg. The soil test results range from <2 to 93 mg/kg, which is considered very low given the anticipated background levels described above.

Tin

Tin compounds are found in various environmental media in both inorganic and organic forms. Tin may be released to the environment from natural and anthropogenic sources. Tin is a component of many soils, and inorganic tin compounds may be released in dusts from wind storms, roads, and agricultural activities. Other less significant natural sources include forest fires and volcanic emissions. Tin concentrations in soil can range from <1 to 200 mg/kg (World Health Organization 2005). The ecological screening level for tin is <50 mg/kg (ANZECC 1992). The soil test results were all below the limit of detection <5 mg/kg.

Vanadium

Vanadium is found in rocks and soil in the relatively insoluble trivalent form, and can also be present in the pentavalent form as vanadates of Cu, Zn, Pb, U, ferric iron, Mn, Ca, or K. Weathering decomposes parent rock and increases vanadium availability in soils. The bulk of vanadium deposited in the environment is retained in the soil, mainly in association with organic matter. The mobility of vanadium in soils is affected by pH. Vanadium is fairly mobile in neutral or alkaline soils relative to other metals, but its mobility decreases in acidic soils (USEPA 2005g).

The Eco-SSLs for vanadium are 7.8 mg/kg for avian wildlife and 280 mg/kg for mammalian wildlife. There is insufficient data to provide Eco-SSLs for plants and soil invertebrates. The soil test results ranged from 41 to 639 mg/kg. Only sites 23 and 27 were above the mammalian wildlife Eco-SSL, whilst all samples were above the avian wildlife Eco-SSL. Concentrations at sites 23 and 27 (385 to 639 mg/kg) were notably higher than the average concentration for vanadium in world soils of 60 mg/kg provided in Alloway (2013). It is not known if this is related to anthropogenic activities or natural conditions.

Zinc

The zinc content in soil is dependent on the composition of the parent rock material. Zinc is expected to demonstrate low mobility in most soils, and is strongly adsorbed to soils at pH 5 or greater. Only those fractions of zinc in soil which are soluble or may be solubilized are bioavailable. Compared to total zinc content of soils, concentrations of zinc in soil solution are low. The solubility of zinc increases at decreasing pH. The bioavailability of zinc in soils is also influenced by total zinc content, pH, organic matter, microbial activity, moisture, and interactions with other macro and micronutrients (USEPA 2007e).

The Eco-SSLs for zinc are 160 mg/kg for plants, 120 mg/kg for soil invertebrates and 46 and 79 mg/kg for avian and mammalian wildlife, respectively. Total Zn concentrations in soil usually fall in the range 10 to 300 mg/kg, with concentrations above 150 mg/kg regarded as high, and likely to result in reduced plant growth. The NEPM health based investigation level is 7,400 mg/kg. The soil test results ranged from 30 to 189 mg/kg, with six samples from three sites above the soil invertebrate Eco-SSL, and five samples from two sites above the plant Eco-SSL (sites 23 and 27). All samples were well below the NEPM health based investigation level. It is not known if the higher concentrations at sites 23 and 27, which also had higher concentrations of chromium, selenium and vanadium, are related to anthropogenic activities or natural conditions.

Mercury

Mercury is released into the environment from volcanic activity, weathering of rocks and as a result of human activity. Once in the environment, mercury can be transformed by bacteria into methyl mercury. Methyl mercury then bioaccumulates in fish and shellfish (that is, it is incorporated into the bodies of those organisms at greater concentrations than in the surroundings). The NEPM health based investigation levels is 40 mg/kg for total mercury. The soil test results showed samples ranged from <0.1 to 0.2 mg/kg, which is well below the NEPM threshold. The results of the sampling program showed no noticeable trends for mercury across the soil landscape of within soil profiles.

6.3.10 Soils Hydrocarbon Screening

The results of the hydrocarbon testing program are shown below in **Table 26**, with laboratory reports provided in **Appendix B**. Levels of all total petroleum hydrocarbons fractions and BTEX in all samples tested were below the limits of reporting and also below the ecological screening levels described in **Section 5.4.7**. This shows that there is no evidence of hydrocarbon contamination at any of the soil sampling sites. Note that laboratory analysis for petroleum hydrocarbons has been reported as both total petroleum hydrocarbons (TPH) and total recoverable hydrocarbons (TRH). Both report the results of the same extraction method that assesses the concentrations of the same compounds. The TRH reporting convention was introduced by Australian authorities as a way of improving consistency of reporting hydrocarbon analysis results and specifically relates to assessment using NEPM (2103) guidelines.

Table 26 Soil Petroleum Hydrocarbon Screening

	EP080/071: Total Petroleum Hydrocarbons					*EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions*							*EP080: BTEXN*							
	C6 - C9 Fraction	**C10 - C14 Fraction**	**C15 - C28 Fraction**	**C29 - C36 Fraction**	**C10 - C36 Fraction (sum)**	**C6 - C10 Fraction**	**C6 - C10 Fraction minus BTEX (F1)**	**>C10 - C16 Fraction**	**>C16 - C34 Fraction**	**>C34 - C40 Fraction**	**>C10 - C40 Fraction (sum)**	**>C10 - C16 Fraction minus Naphthalene (F2)**	**Benzene**	**Toluene**	**Ethylbenzene**	**meta- & para-Xylene**	**ortho-Xylene**	**Total Xylenes**	**Sum of BTEX**	**Naphthalene**
Limit of Reporting	10	50	100	100	50	10	10	50	100	100	50	50	0.2	0.5	0.5	0.5	0.5	0.5	0.2	1
NEPM ESL	-	-	-	-	-	-	125	-	300	2800	-	25	10	10	1.5	-	-	1.6	-	-
Site 1: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 1: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 3: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 3: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 3: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 3: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 5: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 5: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 5: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 5: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 6: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 6: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 6: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 6: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 7: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 7: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 7: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 7: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1

	EP080/071: Total Petroleum Hydrocarbons					*EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions*							*EP080: BTEXN*							
	C6 - C9 Fraction	**C10 - C14 Fraction**	**C15 - C28 Fraction**	**C29 - C36 Fraction**	**C10 - C36 Fraction (sum)**	**C6 - C10 Fraction**	**C6 - C10 Fraction minus BTEX (F1)**	**>C10 - C16 Fraction**	**>C16 - C34 Fraction**	**>C34 - C40 Fraction**	**>C10 - C40 Fraction (sum)**	**>C10 - C16 Fraction minus Naphthalene (F2)**	**Benzene**	**Toluene**	**Ethylbenzene**	**meta- & para-Xylene**	**ortho-Xylene**	**Total Xylenes**	**Sum of BTEX**	**Naphthalene**
Limit of Reporting	10	50	100	100	50	10	10	50	100	100	50	50	0.2	0.5	0.5	0.5	0.5	0.5	0.2	1
Site 8: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 8: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 8: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 8: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 9: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 9: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 9: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 9: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 10: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 10: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 10: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 10: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 12: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 12: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 12: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 12: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 14: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 14: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 14: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 15: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 15: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1

	EP080/071: Total Petroleum Hydrocarbons					*EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions*							*EP080: BTEXN*							
	C6 - C9 Fraction	**C10 - C14 Fraction**	**C15 - C28 Fraction**	**C29 - C36 Fraction**	**C10 - C36 Fraction (sum)**	**C6 - C10 Fraction**	**C6 - C10 Fraction minus BTEX (F1)**	**>C10 - C16 Fraction**	**>C16 - C34 Fraction**	**>C34 - C40 Fraction**	**>C10 - C40 Fraction (sum)**	**>C10 - C16 Fraction minus Naphthalene (F2)**	**Benzene**	**Toluene**	**Ethylbenzene**	**meta- & para-Xylene**	**ortho-Xylene**	**Total Xylenes**	**Sum of BTEX**	**Naphthalene**
Limit of Reporting	10	50	100	100	50	10	10	50	100	100	50	50	0.2	0.5	0.5	0.5	0.5	0.5	0.2	1
Site 15: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 15: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 15: 130 - 140	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 15: 160 - 170	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 17: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 18: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 19: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 22: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 22: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 22: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 22: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 22A: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 23: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 23: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 23: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 23: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 27: 0 - 10	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 27: 20 - 30	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 27: 50 - 60	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1
Site 27: 90 - 100	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1

7 CONCLUSIONS

The overall objective of this study was to provide an integrated geology, terrain and soils assessment for the upstream area of the Project. The study has met this overall objective through desktop, fieldwork and laboratory components in line with a baseline assessment that would support an impact assessment for the Project. The following specific objectives were achieved:

- Characterization of the geology of the Project area;
- Description of the terrain of the Project area;
- Description, classification and mapping of soils within the Project area;
- Characterization of soils in terms of land capability, where agricultural (e.g. community garden and plantation) activities may be impacted by the Project;
- Assessment of the various soil units within the study area to identify inherent /natural features that may be difficult or problematic to manage when disturbed (highly erodible/dispersive, potential acid sulfate soils) and/or difficult to rehabilitate; and
- Assessment of existing levels of metals and hydrocarbons in soils.

Both published and unpublished data was used as reference material for the description of existing conditions. The fieldwork component of the geology, terrain and soil study was undertaken on 15 to 21 November 2016, for the 'upstream' area, consisting of sites within PRL-15 and the onshore export pipeline corridor. The field survey comprised investigation of 27 sites located in and around the proposed upstream components of the Project including the wellpad areas, CPF and associated infrastructure, and the onshore export pipeline corridor. The data obtained during the fieldwork and subsequent laboratory analysis of samples is considered valid and suitable for the study objective. Several observations and key findings for each discipline were noted during the baseline assessment and are described below.

7.1 Geology

The study area is located within central Papua New Guinea, in the foothills, alluvial plains and beach areas south of the Central Range within the Papuan Fold Belt. The study area is located within the eastern section of the Papuan basin, the sediments of which underlie the southern plains and are exposed in the adjacent fold-thrust belt in which the Elk-Antelope gas field is located. The predominant rock types throughout the study area are of sedimentary origin, including interbedded, mudstones, siltstones, sandstones, conglomerates and limestone. Carbonaceous rocks in the form of carbonaceous mudstones and coal were found as detrital angular, cobble-sized particles in Oyomo Creek in the area of the proposed CPF. Varying levels of structural deformation was observed in the field from relatively gently dipping strata to strongly faulted and folded materials. Rockfalls, landslides, flows and gullying are common geohazards in the study area, particularly within the ridge and ravine landforms.

7.2 Terrain

In the north section of PRL-15 and the eastern edge of the onshore export pipeline corridor, the relief is pronounced with homoclinal or hogback/strike and ridge and ravine landforms. The relief is constituted by a succession of ridges and valleys oriented NNW to SSE of the Kuku fault ridge and basins formed by syncline structures of the Nema, Kuku and Goigi basins.

Towards the southern part of PRL-15 and along the western edge of the onshore export pipeline corridor the landform becomes flat alluvial plains, with terrain features including oxbow lakes, swamps, discontinuous levees, point bars and scroll complexes. The drainage status across this area varies greatly depending on local conditions, however large areas of this landform are subject to flooding.

Further south along the onshore export pipeline corridor near the coast the alluvial landform becomes a complex of beach plains, beach ridges and beaches shaped as long parallel ridges and swales (Löffler et al., 1974). The back beach areas include tidal marshes, estuaries and lagoons.

7.3 Soils

The study area is dominated by Entisol and Inceptisol soil orders which are considered poorly formed soils with no to limited soil pedological development. In the ridge and ravine areas in PRL-15 and the eastern edge of the onshore export pipeline corridor, this is due to erosion preventing soil from developing over the bedrock parent material. In the depositional profiles of the alluvial plains in the south western parts of PRL-15 and the western edge of the onshore export pipeline corridor, and beach landforms near the coast, it is due to the young age of the soil. The inundated tidal flats, swamps and saturated alluvial soils are dominated by Histosol soils, which typically form under saturated conditions and have high organic matter in the upper layers.

The soils within the ridge and ravine terrain, mapped as Soil Complex 1, are moderate to well drained, have moderate cation exchange capacity with low levels of nutrients and exhibit stable aggregates. High levels of water induced erosion are evident due to the frequency and intensity of rainfall combined with the sloping landform of the ridge and ravine terrain.

Soils within the alluvial plains landforms, mapped as Soil Complex 2, range from moderate to poorly drained, have low to moderate cation exchange capacity depending on the texture in each layer, low levels of nutrients and exhibit stable aggregates. Potential acid sulfate soils were observed along the onshore export pipeline corridor approximately 7 km inland from the coast.

The sandy soils of Soil Complex 3 within the beach ridges and beach plains are typically well drained in the upper layers, however subsoils are frequently waterlogged due to the low elevation. The soils generally have low cation exchange capacity and very low levels of nutrients. If able to form aggregates, these are stable, however most soils were found to be sandy with no structure.

The inundated soils of Soil Complex 4 were not sampled, however given the saturated condition of these soils, they are considered Histosols and Hydraquents. Histosols are commonly called bogs, moors, peats or mucks. Histosols form in decomposed plant remains that accumulate in water, forest litter, or moss faster than they decay. Hydraquents are inundated soils. There is a risk these soils are PASS given their low position in the landscape and their year round saturation.

The land capability of the study area is categorized as Class VIII in the ridge and ravine terrain as well as the frequently flooded alluvial plains and beach landforms. This land capability is essentially unsuitable for broadscale agriculture or grazing. Only areas within Soil Complex 2, which are the better-drained areas of the alluvial plains, exhibited the possibility of some grazing and tree crops with areas of Class VI land capability evident. All activities associated with subsistence garden endeavors were observed to rely on high levels of human intervention and inputs such as creating artificial drainage and mounding to provide a suitable growing medium.

Potential acid sulfate soil screening tests show that the study area contains several soil complexes, which may be prone to releasing sulfuric acid if disturbed and exposed to the atmosphere. The soil complexes at highest risk are soil complex 2, 3 and 4, all of which are located in the lower lying areas which experience frequent inundation. The SPOCAS testing also indicated moderate risk levels of acid generation from within the subsoils of the three sites tested.

Analyses were undertaken of metal concentrations in soil samples to establish background levels for future comparison. Ecological soil screening levels (USEPA Eco-SSLs) and human health based screening levels (NEPM 2013) were also used as guides to assess the status of current background levels. The majority of samples were well below the NEPM health based screening levels across all metals, however there was wide variation when compared to the US EPA Eco-SSLs. Most notable results were at sites 23 and 27, which were relatively high in chromium, selenium, vanadium and zinc.

There is no evidence of hydrocarbon contamination of soil at any of the sampling sites. Levels of TPHs and BTEX in all samples were below the limits of reporting and also below ecological screening levels.

8 STUDY TEAM

This geology, terrain and soils baseline report has been prepared by the SLR Soil Science Team including the personnel listed below:

- Clayton Richards (SLR Consulting – soils specialist).

Clayton is the Project Manager for the geology, terrain and soils technical study. Clayton is a Certified Professional Soil Scientist and is responsible for all assessment and reporting for the soils components of this document.

- Christopher Armit (SLR Consulting – geology specialist).

Christopher is a Geologist and was responsible for the geological investigations and observations recording during fieldwork, as well as the geology components of this report.

- Murray Fraser (SLR Consulting – soils specialist).

Murray Fraser is a Senior Agronomist and was responsible for soil sample collection, GPS recordings and logistics during the fieldwork.

9 GLOSSARY AND ABBREVIATIONS

Term	Definition
Acid sulfate soils (ASS)	The common name given to naturally occurring sediments and soils containing iron sulfides, which may result in the formation of sulfuric acid if exposed to oxygen
Alluvial	Material deposited by water moving across the land surface
Colluvial	Material accumulated through the action of gravity, common on footslopes and drainage depressions
Diagnostic horizons	A soil layer (horizon) used to assist in the determination of the soil order category.
Dispersion	Process by which clay particles are repelled by electrostatic forces and mechanical forces and separate from each other forming a suspension of clay particles in water
Electrical conductivity	The measurement of how much electricity moves through a solution—the saltier the solution, the more electricity moves through it, and the higher the electrical conductivity reading
Field pH	pH_F of soil and deionized water
Field oxidized pH	pH_{FOX} of soil and hydrogen peroxide
Groundwater	Water occurring below the surface of the landscape, at greater pressure than atmospheric, occupying spaces in regolith and bedrock. The upper surface of the groundwater is the water table
Infiltration	The process by which water enters the soil from the soil surface
Massive	A soil which appears to be solid or devoid of peds
Mottles/mottling	In soils, spots, blotches or streaks of subdominant colors that differ from the soil matrix color
Ochric horizon	A more or less minimally developed surface horizon, typically thin or light
	colored, that does not meet the criteria for any other epipedon
Organic matter	Plant or animal material in various stages of decomposition
Pedogenic horizons	Layers within the soil relating to or denoting processes of soil formation
Pyrite	Pale-bronze or brass-yellow, isometric mineral (FeS_2), the most widespread and abundant of the sulfide minerals
Saline soil	Soil containing sufficient concentrations of soluble salts within the soil profile to result in reduced plant productivity or plant death. Climate, soil type, depth to salinity in the soil, and plant species influence the effect on plant productivity
Salinity	The presence of soluble salts in soil or water
Sedimentary	Type of rocks that are formed by the deposition of materials on the earth's surface or in waters
Sodic	A soil with a high percentage of sodium ions (in soluble or exchangeable form), exhibiting degraded soil behavior such as dispersion when wet and crusting when dry
Subsoil	Usually referred to as the B horizon which can be clay rich but often is less fertile than the topsoil but can hold more moisture
Texture contrast	An abrupt change in texture between the surface and subsoil
Topsoil	Usually referred to as the A horizon where most plans, roots, earthworms, insects and microorganisms are active
Waterlogging	Occurs when water cannot drain away through the soil
Watertable	Portion of the ground saturated with water, often used specifically to refer to the upper limit of the saturated ground

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Appendix A – Soil Profile Descriptions

Table 1 Detailed Description: Site 1

USDA Name	1A - Lithic Udorthent
Soil Order	Entisol
Site No.	1 (ELT1 in PRL15)
Lat/Long (WGS84)	-7.34869/145.18997
Geology	Sandstone (fine grained)
Landform Pattern	Hills
Landform Element	Hillslope
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	6.5%
Slope Type	Simple
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Rapid
Permeability	High
Site Disturbances	Existing road cutting
Current Land Use	Disused road

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.10	Dark yellowish brown sandy loam, weak structure of 10 mm crumb peds with a sandy fabric and weak consistence. Non-saline (ECe<2), Slightly acidic (pH 6.5), high CEC and non-sodic (ESP 0.3%). Stable aggregates (Emerson 4). Extremely low organic matter (<0.5%) and Very low organic carbon (<0.5%). Nil mottling; Nil stone content; Nil segregations; Gradual and irregular boundary.
	A2 0.10 – 0.30	Dark yellowish brown sandy loam, weak structure of 10-20mm sub angular blocky peds with a sandy fabric and weak consistence. Non-saline (ECe<2), slightly acidic (pH 6.5), high CEC and non-sodic (ESP 0.8%). Stable aggregates (Emerson 4). Extremely low organic matter (<0.5%) and Very low organic carbon (<0.5%). Nil mottling, nil stone content, nil segregations, gradual and irregular boundary.
	B/C 0.30 – 1.10	Dark yellowish brown weathered sandstone, apedal sand with weak consistence. Nil mottling, weathered sandstone with 30% 20-50 mm stone content.

Table 2 Detailed Description: Site 2

USDA Name	1D - Dystrudept
Soil Order	Inceptisol
Site No.	2 (Track CPF1 to FC-C)
Lat/Long (WGS84)	-7.33559/145.21872
Geology	Mudstone (inc. coal layer)
Landform Pattern	Alluvial Plain
Landform Element	Stream Channel
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0-1%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Poor
Permeability	Slow
Site Disturbances	Streambank erosion
Current Land Use	Undisturbed native vegetation

Profile	Horizon / Depth (m)	Soil Description
	B1 0.0 – 0.10	Light brown light clay, moderate structure of 10-20 mm irregular smooth faced peds and weak consistence. 50% orange/grey strong contrast mottling; Nil stone content, nil segregations, gradual and even boundary.
	B2 0.10 – 1.00	Light brown medium clay, moderate structure of 20-50mm irregular smooth faced peds and weak consistence. 50% orange/grey strong contrast mottling, nil stone content and nil segregations.

Table 3 Detailed Description: Site 3

USDA Name	1D - Dystrudept
Soil Order	Inceptisol
Site No.	3 (CPF1)
Lat/Long (WGS84)	-7.35113/145.19216
Geology	Alluvial deposits
Landform Pattern	Alluvial back plain
Landform Element	Back plain
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0.0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Loose
Drainage	Poor to moderate
Permeability	High
Site Disturbances	Active clearing of proposed CPF
Current Land Use	Area of proposed CPF site.

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.10	Brown sandy clay loam, moderate structure of 10-20 mm sub angular blocky rough peds, and moderate consistence. Non-saline (ECe<2), strongly acidic (pH 5.4), low CEC and non-sodic (ESP 0.7%). Stable aggregates (Emerson 4). Moderate organic matter (3.0%) and moderate organic carbon (1.7%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B21 0.10 – 0.40	Brown sandy clay loam, moderate structure of 10-20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), strongly acidic (pH 5.1), low CEC and non-sodic (ESP 1.8%). Stable aggregates (Emerson 4). Very low organic matter (0.9%) and very low organic carbon (0.5%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B22 0.40 – 1.10	Dark yellowish brown sandy clay loam, moderate structure of 10-20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), strongly acidic (pH 5.4 to 5.4), moderate CEC and non-sodic (ESP 1.9 to 2.2%). Stable aggregates (Emerson 4). Extremely low organic matter (<0.5%) and Very low organic carbon (<0.5%). Nil mottling, nil stone content and nil segregations.

Table 4 Detailed Description: Site 4

USDA Name	1A - Lithic Udorthent
Soil Order	Entisol
Site No.	4 (ANT5 Track)
Lat/Long (WGS84)	-7.15724/145.13493
Geology	Mudstone/Shale
Landform Pattern	Hills
Landform Element	Hillslope/Crest
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	6.5%
Slope Type	Crest
Surface Coarse Fragments	Shale and eroded soil
Surface Condition	Cryptogram
Drainage	Well
Permeability	Rapid
Site Disturbances	Existing track cutting
Current Land Use	Maintained track

Profile	Horizon / Depth (m)	Soil Description
	BC 0.0 – 1.00	A very thin veneer of soil approximately 10 to 20mm thick overlies shale mudstone rock. The soil component is a light brown silty clay with moderate structure and weak consistence.

Table 5 Detailed Description: Site 5

USDA Name	1A - Lithic Udorthent
Soil Order	Entisol
Site No.	5 (ANT1 to ANT3 track)
Lat/Long (WGS84)	-7.14032/145.14095
Geology	Mudstone
Landform Pattern	Hills/Mountains
Landform Element	Hillslope
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	22%
Slope Type	Simple
Surface Coarse Fragments	10-20mm weathered mudstone
Surface Condition	Cryptogram
Drainage	Well
Permeability	Moderate
Site Disturbances	Existing track cutting
Current Land Use	Disused track

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.70	Dark yellowish brown clay loam, moderate structure of 20-50 mm sub angular blocky smooth faced peds, and weak consistence. Non-saline (ECe<2), strongly acidic (pH 5.1), moderate CEC and non-sodic (ESP 0.3%). Stable aggregates (Emerson 4). Low to high organic matter (1.5 to 3.3%) and low to high organic carbon (0.9 to 1.9%). Nil mottling, 40% stone content 20mm mudstones, nil segregations, gradual and even boundary.
	B22 0.70 – 1.00	Dark yellowish brown loam, moderate structure of 50-100 mm sub angular blocky smooth faced peds, and weak to moderate consistence. Non-saline (ECe<2), strongly acidic (pH 5.1 to 5.3), high CEC and non-sodic (ESP 0.2%). Stable aggregates (Emerson 4). Low organic matter (1.4%) and low organic carbon (0.8%). Nil mottling, 60% stone content 20mm mudstones and nil segregations.

Table 6 Detailed Description: Site 6

USDA Name	1C - Dystrochrept
Soil Order	Inceptisol
Site No.	6 (Fly Camp E)
Lat/Long (WGS84)	-7.64972/145.26226
Geology	Claystone
Landform Pattern	Hills
Landform Element	Lower Hillslope
Land System (CSIRO 1969)	Aro
Dominant Slope (%)	25%
Slope Type	Simple
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Nil
Current Land Use	Native Jungle

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.15	Dark brown clay loam, moderate structure of 10-20 mm smooth faced crumb shaped peds, and weak consistence. Non-saline (ECe<2), neutral (pH 6.6), high CEC and non-sodic (ESP 0.3). Stable aggregates (Emerson 4). Very high organic matter (7.0% and very high organic carbon (4.1%). Nil mottling, nil stone content, nil segregations, gradual and irregular boundary.
	B22 0.15 – 1.00	Dark yellowish brown clay loam, massive structure and weak to moderate consistence. Non-saline (ECe<2), moderate to strongly acidic (pH 5.7 to 5.2), high CEC and non-sodic (ESP 0.7 to 3.5%). Stable aggregates (Emerson 4). Moderate organic matter (2.0 to 2.5%) and moderate organic carbon (1.2 to 1.4%). 40% orange/grey clear contrast mottling, nil stone content and nil segregations.

Table 7 Detailed Description: Site 7

USDA Name	1C - Dystrochrept
Soil Order	Inceptisol
Site No.	7 (Fly Camp B)
Lat/Long (WGS84)	-7.50458/145.21363
Geology	Sedimentary (Mudstone)
Landform Pattern	Hills
Landform Element	Crest/Upper Hillslope
Land System (CSIRO 1969)	Aro
Dominant Slope (%)	12%
Slope Type	Crest
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Nil
Current Land Use	Active roadside cutting

Profile	Horizon / Depth (m)	Soil Description
	B 0.0 – 1.20	Brownish yellow silty clay, moderate structure of 20 mm smooth faced irregular shaped peds, and weak consistence. Non-saline (ECe<2), strongly to very strongly acidic (pH 5.1 to 4.8), moderate to high CEC and non-sodic (ESP 0.7 to 3.8%). Stable aggregates (Emerson 4). Moderate organic matter (1.7 to 2.5%) and moderate organic carbon (1.0 to 1.5%). 50% faint contrast orange/grey mottling, 20% 20mm weathered mudstones and nil segregations.

Table 8 Detailed Description: Site 8

USDA Name	2C - Psammaquent
Soil Order	Entisol
Site No.	8 (Fly Camp D)
Lat/Long (WGS84)	-7.31336/145.13815
Geology	Sedimentary (Claystone)
Landform Pattern	Alluvial
Landform Element	Creek bank
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Soft
Drainage	Well
Permeability	Well
Site Disturbances	Cleared Fly Camp
Current Land Use	Fly Camp regrowth

Profile	Horizon / Depth (m)	Soil Description
	B 0.0 – 1.20	Dark brown sandy clay loam, apedal structure with small layers of weak pedality of 10-20 mm rough faced blocky shaped peds, and weak consistence. Non-saline (ECe<2), neutral to moderately acidic (pH 6.6 to 5.8), moderate to high CEC and non-sodic (ESP 0.1 to 0.3). Stable aggregates (Emerson 4). Moderate organic matter (1.7 to 2.6%) and moderate organic carbon (1.0 to 1.6%). Nil mottling, nil stones and nil segregations.

Table 9 Detailed Description: Site 9

USDA Name	1F - Sulfaquent
Soil Order	Entisol
Site No.	9 (Kuku Creek Tributary)
Lat/Long (WGS84)	-7.27525/145.19418
Geology	Sedimentary (Claystone)
Landform Pattern	Alluvial
Landform Element	Creek bank
Land System (CSIRO 1969)	Vailala
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Poor
Permeability	Very poor
Site Disturbances	Existing cleared track
Current Land Use	Disused track clearing

Profile	Horizon / Depth (m)	Soil Description
	B 0.0 – 1.20	Grey silty clay, massive structure with smooth fabric, and moderate consistence. Non-saline (ECe<2), neutral to moderately acidic (pH 6.9 to 6.0), moderate to high CEC and non-sodic (ESP 0.2 to 0.4%). Stable aggregates (Emerson 4). Moderate to high organic matter (2.2 to 3.5%) and moderate organic carbon (1.3 to 2.0%). 50% distinct orange mottling, nil stones and nil segregations.

Table 10 Detailed Description: Site 10

USDA Name	1B - Dystrudept
Soil Order	Inceptisol
Site No.	10 (Elk 2)
Lat/Long (WGS84)	-7.05908/145.13529
Geology	Sedimentary (Claystone)
Landform Pattern	Hills
Landform Element	Lower Hillslope
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	25%
Slope Type	Simple
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Nil
Current Land Use	Native Jungle adjacent regrowth on cleared track.

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.30	Reddish brown light clay, moderate structure of 20 mm smooth faced crumb to sub angular blocky shaped peds, and weak to moderate consistence. Non-saline (ECe<2), very strongly acidic (pH 4.9 to 4.7), very low CEC and non-sodic to marginally sodic (ESP 1.7 to 7.1%). Stable aggregates (Emerson 4). Low to high organic matter (1.4 to 3.2%) and low to high organic carbon (0.6 to 1.8%). Nil mottling, nil stone content, nil segregations, gradual and irregular boundary.
	B22 0.30 – 1.20	Reddish brown medium clay, moderate structure of 20-50 mm smooth faced angular blocky shaped peds, and weak to moderate consistence. Non-saline (ECe<2), very strongly acidic (pH 4.8 to 4.7), Very low CEC and marginally sodic to sodic (ESP 7.2 to 9.2%). Stable aggregates (Emerson 4). Very low organic matter (0.9 to 1.0%) and very low organic carbon (0.5 to 0.6%). Nil mottling, nil stone content and nil segregations.

Table 11 Detailed Description: Site 11

USDA Name	1A - Lithic Udorthent
Soil Order	Entisol
Site No.	11 (Track ELK 2 to ELK 3)
Lat/Long (WGS84)	-7.06584/145.14067
Geology	Sedimentary (Siltstone)
Landform Pattern	Hills
Landform Element	Hillslope/crest
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	6%
Slope Type	Crest
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Benched road cutting
Current Land Use	Disused road

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.40	Light brown clay, moderate structure of 10-20 mm smooth faced sub angular blocky shaped peds, and moderate consistence. 50% faint orange grey mottling, 20% weathered mudstone/siltstones, nil segregations, gradual and even boundary.
	B/C 0.40 – 1.20	Light brown weathered siltstone and clay, moderate structure of 20 mm smooth faced sub angular blocky shaped peds, and moderate consistence. Nil mottling, 50% stone content and nil segregations.

Table 12 Detailed Description: Site 12

USDA Name	1B - Dystrudept
Soil Order	Inceptisol
Site No.	12 (ELK 3)
Lat/Long (WGS84)	-7.06918/145.12993
Geology	Sedimentary (Siltstone)
Landform Pattern	Hills
Landform Element	Upper Hillslope
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	25%
Slope Type	simple
Surface Coarse Fragments	20mm siltstone
Surface Condition	Cryptogram
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Existing road cutting
Current Land Use	Disused road

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.80	Light reddish brown light clay, moderate structure of 20 mm smooth faced sub angular blocky shaped peds, and moderate consistence. Non-saline (ECe<2), very strongly acidic (pH 4.6), moderate CEC and non-sodic (ESP 2.3 to 3.0%). Stable aggregates (Emerson 4). High to very low organic matter (4.0 to 0.7%) and high to very low organic carbon (2.3 to <0.5%). 10-20% faint pale grey mottling, 20% weathered siltstones, nil segregations, gradual and uneven boundary.
	B/C 0.80 – 1.20	Pale brown medium clay, moderate structure of 20-50 mm smooth faced sub angular blocky shaped peds, and moderate consistence. Non-saline (ECe<2), very strongly acidic (pH 4.6), moderate CEC and marginally sodic (ESP 6.3%). Stable aggregates (Emerson 4). Very low organic matter (0.9%) and very low organic carbon (0.5%). Nil mottling, 20% siltstones and nil segregations.

Table 13 Detailed Description: Site 13

USDA Name	1A - Lithic Udorthent
Soil Order	Entisol
Site No.	13 (ELK 4)
Lat/Long (WGS84)	-7.11088/145.13849
Geology	Sedimentary (Mudstone)
Landform Pattern	Hills
Landform Element	Hillslope
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	40%
Slope Type	simple
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Well
Permeability	Well
Site Disturbances	Well pad site
Current Land Use	Adjacent well pad

Profile	Horizon / Depth (m)	Soil Description
	B/C 0.0 – 0.80	Light brown weathered mudstone and clay, moderate structure of 10-20 mm smooth faced sub angular blocky shaped peds, and weak consistence. Nil mottling, 50% 20mm weathered mudstones and nil segregations.

Table 14 Detailed Description: Site 14

USDA Name	1A - Lithic Udorthent
Soil Order	Entisol
Site No.	14 (ANT 6)
Lat/Long (WGS84)	-7.14898/145.15753
Geology	Sandstone Laminite
Landform Pattern	Hills
Landform Element	Hillslope
Land System (CSIRO 1969)	Lohiki
Dominant Slope (%)	4.0%
Slope Type	Simple
Surface Coarse Fragments	Nil
Surface Condition	Organic matter cover
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Road cutting
Current Land Use	Regrowth beside road

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.20	Light brown light clay, moderate structure of 10-20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), very strongly acidic (pH 5.0), moderate CEC and non-sodic (ESP 1.0%). Stable aggregates (Emerson 4). Very high organic matter (5.5%) and very high organic carbon (3.2%). Nil mottling 10-20% weathered laminate mudstones, nil segregations, gradual and even boundary.
	B22 0.20 – 0.60	Light brown medium clay, moderate structure of 20 mm sub angular blocky rough peds, and weak consistence. Non-saline (ECe<2), very strongly acidic (pH 4.8 to 4.7), moderate CEC and non-sodic (ESP 1.4 to 1.8%). Stable aggregates (Emerson 4). Very low to low organic matter (0.9 to 1.7%) and very low to low organic carbon (0.5 to 1.0%). Nil mottling, 40% mudstones, nil segregations, gradual and even boundary.
	C 0.60 +	Weathering shale/laminite..

Table 15 Detailed Description: Site 15

USDA Name	1D - Dystrudept
Soil Order	Inceptisol
Site No.	15 (Herd Base)
Lat/Long (WGS84)	-7.35595/145.22398
Geology	Sedimentary (Mudstone)
Landform Pattern	River Bank (terrace)
Landform Element	Lower Slope
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	1.5%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Cryptogram
Drainage	Well
Permeability	Well
Site Disturbances	Road cutting
Current Land Use	Regrowth beside road

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.10	Brown sandy clay loam, moderate structure of 10mm sub angular blocky sandy peds, and moderate consistence. Non-saline (ECe<2), moderately acidic (pH 5.8), low CEC and non-saline (ESP 0.6%). Stable aggregates (Emerson 4). Moderate organic matter (1.9%) and moderate organic carbon (1.1%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	A2 0.10 – 1.20	Brown sandy loam, apedal structure, sandy fabric and weak consistence. Non-saline (ECe<2), slightly acidic (pH 6.4 to 6.1), low to moderate CEC and non-sodic (ESP 0.3 to 0.8%). Stable aggregates (Emerson 4). Very low to extremely low organic matter (0.5 to 0.9%) and very low to extremely low organic carbon (0.5 to <0.5%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	A3 1.20 – 1.45	Brown sandy clay loam, moderate structure of 20-50mm sub angular blocky sandy peds, and moderate consistence. Non-saline (ECe<2), neutral (pH 6.6), moderate CEC and non-sodic (ESP 0.5%). Stable aggregates (Emerson 4). Extremely low organic matter (0.5%) and extremely low organic carbon (<0.5%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B2 1.45 +	Pale brown medium clay, strong sub angular blocky structure and strong consistence. Non-saline (ECe<2), slightly acidic (pH 6.1), high CEC and non-sodic (ESP 0.5%). Stable aggregates (Emerson 4). Extremely low organic matter (0.5%) and extremely low organic carbon (<0.5%). 20% faint grey mottles, nil stone content and nil segregations.

Table 16 Detailed Description: Site 16

USDA Name	3A - Psammaquent
Soil Order	Entisol
Site No.	16 (T5 Harevavo channel)
Lat/Long (WGS84)	-7.85191/145.28582
Geology	Unknown
Landform Pattern	Beach
Landform Element	Back plain
Land System (CSIRO 1969)	Malalaua
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Loose
Drainage	Well
Permeability	Well
Site Disturbances	Village area
Current Land Use	Edge of village

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 1.00	Pale grey beach sand, apedal structure and very weak consistence. Nil mottling, nil stone content and nil segregations.

Table 17 Detailed Description: Site 17

USDA Name	3A - Psammaquent
Soil Order	Entisol
Site No.	17 (Harevavo Lagoon)
Lat/Long (WGS84)	-7.85165/145.29578
Geology	Unknown
Landform Pattern	Beach
Landform Element	Back plain
Land System (CSIRO 1969)	Malalaua
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Loose
Drainage	Well
Permeability	Well
Site Disturbances	Village area
Current Land Use	Lagoon bank and access

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 1.00	Pale grey beach sand, apedal structure and very weak consistence. Non-saline (ECe<2), neutral (pH 7.1), very low CEC and non-sodic (ESP 1.2%). Unable to form aggregates (Emerson 8). Low organic matter (1.4%) and low organic carbon (0.8%). Nil mottling, nil stone content and nil segregations.

Table 18 Detailed Description: Site 18

USDA Name	3A - Psammaquent
Soil Order	Entisol
Site No.	18 (Mareke Creek Bank)
Lat/Long (WGS84)	-7.85520/145.31617
Geology	Unknown
Landform Pattern	Beach
Landform Element	Back plain/creek bank
Land System (CSIRO 1969)	Araimiri
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Loose/trampled
Drainage	Well
Permeability	Well
Site Disturbances	Village area
Current Land Use	Adjacent track

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.10	Light brown sandy clay loam, weak crumb structure and very weak consistence. Moderately saline (ECe = 6.6), neutral (pH 7.2), moderate CEC and sodic (ESP11.5%). Moderately stable aggregates (Emerson 3). Low organic matter (1.4%) and low organic carbon (0.8%). Nil mottling, nil stone content and nil segregations.
	A2 0.10 – 0.60+	Grey beach sand, apedal structure and very weak consistence. Nil mottling, nil stones and nil segregations. Tidal waterlogging was noted.

Table 19 Detailed Description: Site 19

USDA Name	3A - Psammaquent
Soil Order	Entisol
Site No.	19 (Kavava – Near Fly Camp G, Drainage line)
Lat/Long (WGS84)	-7.85466/145.32849
Geology	Unknown
Landform Pattern	Beach
Landform Element	Back plain drainage depression
Land System (CSIRO 1969)	Araimiri
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Soft
Drainage	Well
Permeability	Well
Site Disturbances	Village area
Current Land Use	Adjacent track

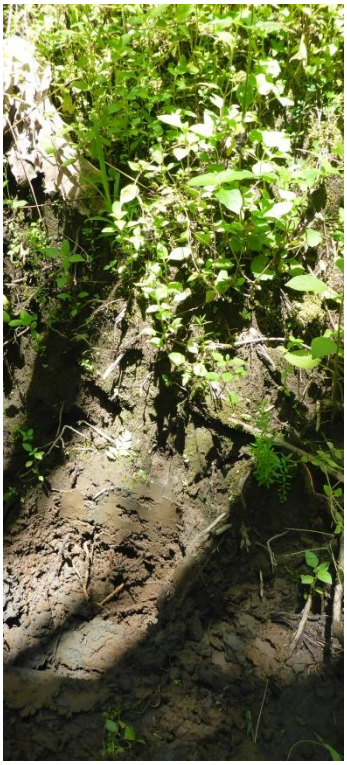
Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.10	Grey sand, apedal structure and very weak consistence. Nil mottling, nil stone content and nil segregations.
	A2 0.10 – 0.60+	Greyish brown sandy loam, apedal structure and very weak consistence. Non-saline (ECe<2), slightly acidic (pH 6.4), low CEC and non-sodic (ESP 1.2%). Stable aggregates (Emerson 4). Moderate organic matter (2.7%) and moderate organic carbon (1.5%). Nil mottling, nil stones and nil segregations. Surface flow waterlogging was noted.

Table 20 Detailed Description: Site 20

USDA Name	3A - Psammaquent
Soil Order	Entisol
Site No.	20 (Oru - Edge of Palm plantation & Village)
Lat/Long (WGS84)	-7.86282/145.34412
Geology	Unknown
Landform Pattern	Beach back plain
Landform Element	Drainage line
Land System (CSIRO 1969)	Malalaua
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Soft
Drainage	Well
Permeability	Well
Site Disturbances	Village track
Current Land Use	Adjacent track and drainage line

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 1.00	Grey sand, apedal structure and very weak consistence. Nil mottling, nil stone content and nil segregations.

Table 21 Detailed Description: Site 21

USDA Name	3A - Psammaquent
Soil Order	Entisol
Site No.	21 (Herakela - Inlet channel bank)
Lat/Long (WGS84)	-7.86850/145.35186
Geology	Unknown
Landform Pattern	Beach
Landform Element	Back plain inlet channel
Land System (CSIRO 1969)	Malalaua
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	loose
Drainage	Well
Permeability	Well
Site Disturbances	Village track
Current Land Use	Village track

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 1.00+	Light greyish brown sand, apedal structure and very weak consistence. Nil mottling, nil stone content and nil segregations.

Table 22 Detailed Description: Site 22

USDA Name	2A - Sulfaquent
Soil Order	Entisol
Site No.	22 (Fly Camp F riverbank)
Lat/Long (WGS84)	-7.78997/145.26257
Geology	Sedimentary (Claystone)
Landform Pattern	River flat
Landform Element	River bank
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Soft
Drainage	Poor
Permeability	Moderate
Site Disturbances	Edge of village
Current Land Use	River access

Profile	Horizon / Depth (m)	Soil Description
	B21 0.0 – 0.40	Yellowish brown light clay, moderate sub angular blocky structure and moderate consistence. Non-saline (ECe<2), strongly acidic (pH 5.5 to 5.4), high CEC and non-sodic (ESP 0.9 to 3.1%). Stable aggregates (Emerson 4). Moderate to low organic matter (2.5 to 1.0%) and moderate to low organic carbon (1.4 to 0.6%). 20% orange and grey mottling, nil stone content nil segregations, gradual and even boundary.
	B22 0.40 – 1.00+	Light brown medium clay, massive structure and moderate consistence. Non-saline (ECe<2), slightly acidic (pH 6.5 to 6.3), high CEC and sodic (ESP 9.5 to 10.6%). Moderately stable aggregates (Emerson 3). Low to very low organic matter (1.2 to 0.9%) and low to very low organic carbon (0.7 to 0.5%). Nil mottling, nil stones and nil segregations. River flow waterlogging was noted. Brown color indicates oxidation of grey clay below.

Table 23 Detailed Description: Site 22A

USDA Name	2A - Sulfaquent
Soil Order	Entisol
Site No.	22A (Fly Camp F riverbank)
Lat/Long (WGS84)	-7.78997/145.26257
Geology	Sedimentary (Claystone)
Landform Pattern	River flat
Landform Element	River bank
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Soft
Drainage	Poor
Permeability	Moderate
Site Disturbances	Edge of village
Current Land Use	River access

Profile	Horizon / Depth (m)	Soil Description
	B22 0.90 – 1.00	Oxidized brown coloring over dark grey waterlogged medium clay, massive structure and moderate consistence. Non-saline (ECe<2), slightly acidic (pH 6.1), high CEC and non-sodic (ESP 5.6%). Stable aggregates (Emerson 4). Low organic matter (1.5%) and low organic carbon (0.9%). 20% gley mottling, nil stone content and nil segregations.

Table 24 Detailed Description: Site 23

USDA Name	2B - Psammaquent
Soil Order	Entisol
Site No.	23 (Track Fly Camp F to Paevera)
Lat/Long (WGS84)	-7.79996/145.27930
Geology	Sedimentary
Landform Pattern	Back plain flats
Landform Element	Alluvial flats
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Mulched
Drainage	Poor
Permeability	Moderate
Site Disturbances	Nil at test pit. Previous road construction in 20m
Current Land Use	Native forest and regrowth

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.40	Yellowish brown sandy clay loam, weak sub angular blocky structure and weak consistence. Non-saline (ECe<2), slightly acidic to moderately acidic (pH 6.4 to 6.0), very low to low CEC and non-sodic (ESP 0.6 to 2.3%). Stable aggregates (Emerson 4). Moderate organic matter (1.7 to 2.8%) and moderate organic carbon (1.0 to 1.6%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B2 0.40 – 1.00+	Yellowish brown loamy sand, weak crumb structure, sandy fabric and weak consistence. Non-saline (ECe<2), slightly to moderately acidic (pH 6.2 to 5.8), low CEC and non-sodic (ESP 2.4 to 3.0%). Stable aggregates (Emerson 4). Extremely low organic matter (<0.5%) and extremely low organic carbon (<0.5%). Nil mottling, nil stones and nil segregations. Ground water seepage at 0.6 m.

Table 25 Detailed Description: Site 24

USDA Name	2B - Psammaquent
Soil Order	Entisol
Site No.	24 (Arehava village)
Lat/Long (WGS84)	-7.81715/145.28836
Geology	Alluvial
Landform Pattern	Back plain flats
Landform Element	Alluvial foot slopes
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Firm
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Eroded drainage line
Current Land Use	Jungle and nearby gardens

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.20	Dark brown sandy clay loam, weak sub angular blocky structure and moderate consistence. Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B2 0.20 – 0.60+	Brown loamy sand, weak sub angular blocky structure, sandy fabric and weak consistence. Nil mottling, nil stones and nil segregations.

Table 26 Detailed Description: Site 25

USDA Name	2B - Psammaquent
Soil Order	Entisol
Site No.	25 (Arehava village track)
Lat/Long (WGS84)	-7.81712/145.28837
Geology	Alluvial
Landform Pattern	Back plain flats
Landform Element	Alluvial foot slopes
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	Disturbed
Drainage	Moderate
Permeability	Moderate
Site Disturbances	Drainage trench
Current Land Use	Jungle vegetation

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.20	Dark brown sandy clay loam, weak sub angular blocky structure and moderate consistence. Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B2 0.20 – 0.60+	Brown loamy sand, weak sub angular blocky structure, sandy fabric and weak consistence. Nil mottling, nil stones and nil segregations.

Table 27 Detailed Description: Site 26

USDA Name	2B - Psammaquent
Soil Order	Entisol
Site No.	26 (Lab sample label 27) (T2 Creek bank)
Lat/Long (WGS84)	-7.82366/145.29970
Geology	Sedimentary
Landform Pattern	Back plain flats
Landform Element	Alluvial foot slopes
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	0%
Slope Type	Flat
Surface Coarse Fragments	Nil
Surface Condition	mulched
Drainage	Poor
Permeability	Moderate
Site Disturbances	Adjacent walking trail
Current Land Use	Jungle vegetation

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.10	Yellowish brown sandy clay loam, moderate sub angular blocky structure and moderate consistence. Non-saline (ECe<2), strongly acidic (pH 5.5), low CEC and non-sodic (ESP 1.1%). Stable aggregates (Emerson 4). Moderate organic matter (2.2%) and moderate organic carbon (1.2%). Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B2 0.10 – 1.00+	Yellowish brown sandy clay loam, moderate sub angular blocky structure and moderate consistence. Non-saline (ECe<2), slightly to moderately acidic (6.5 to 5.6), low CEC and non-sodic (ESP 1.0 to 1.6%). Stable aggregates (Emerson 4). Low organic matter (1.2 to 1.7%), and low organic carbon (0.7 to 1.0%). Nil mottling, nil stone content and nil segregations.

Table 28 Detailed Description: Site 27

USDA Name	2B - Psammaquent
Soil Order	Entisol
Site No.	27 (Paevera village)
Lat/Long (WGS84)	-7.82926/145.31654
Geology	Sedimentary
Landform Pattern	Back plain flats
Landform Element	Foot slopes
Land System (CSIRO 1969)	Hepea
Dominant Slope (%)	4%
Slope Type	Simple
Surface Coarse Fragments	Nil
Surface Condition	Eroded/trampled
Drainage	moderate
Permeability	Moderate
Site Disturbances	Village uses
Current Land Use	Village rubbish pit

Profile	Horizon / Depth (m)	Soil Description
	A1 0.0 – 0.20	Dark brown sandy clay loam, moderate sub angular blocky structure and moderate consistence. Nil mottling, nil stone content, nil segregations, gradual and even boundary.
	B2 0.10 – 1.00+	Yellowish brown sandy clay loam, moderate sub angular blocky structure and moderate consistence. Nil mottling, nil stone content and nil segregations.

Appendix B – Soil Laboratory Results

CERTIFICATE OF ANALYSIS

Work Order	: **EB1627912**	Page	: 1 of 123
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR CLAYTON RICHARDS	Contact	: Customer Services EB
Address	: Level 2 15 ASTOR TERRACE SPRING HILL 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 02 4920 3000	Telephone	: +61-7-3243 7222
Project	: 620.11227.00300 TOTAL PNG	Date Samples Received	: 24-Nov-2016 11:52
Order number	: 620.11227.00300	Date Analysis Commenced	: 09-Dec-2016
C-O-C number	: ----	Issue Date	: 17-Jan-2017 09:29
Sampler	: CLAYTON RICHARDS		
Site	: ----		
Quote number	: EN/032/16		
No. of samples received	: 129		
No. of samples analysed	: 118		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Greg Vogel	Laboratory Manager	Brisbane Acid Sulphate Soils, Stafford, QLD
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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

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

- EK061G (Total Kjeldahl Nitrogen as N): Sample EB1627912_051 shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EK067G (Total Phosphorous as P): Sample EB1627912_042 shows poor spike recovery due to sample heterogeneity. This has been confirmed by visual inspection.
- EK061G (Total Kjeldahl Nitrogen as N): Sample EB1627912_001 shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EK061G (Total Kjeldahl Nitrogen as N): Sample EB1627912_021 shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EK067G (Total Phosphorous as P): Sample EB1627912_031 shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- ED007 (Exchangeable Cations): Calcium/Magnesium ratio could not be determined as both the Calcium and Magnesium results were less than reportable limits for some sample.
- ED007 (Exchangeable Cations): Magnesium/Potassium ratio could not be determined as both the Magnesium and Potassium results were less than reportable limits for some samples.
- EG005T (Total Metals by ICP-AES): Sample EB1627912-061 shows poor spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- 04/01/17: CEC methods assigned according to pH/EC decision tree.
- EP080: High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- ASS: EA029 (SPOCAS): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from kg/t dry weight to kg/m3 in-situ soil, multiply reported results x wet bulk density of soil in t/m3.
- EA058 Emerson: V. = Very, D. = Dark, L. = Light, VD. = Very Dark
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity ($H^+ + Al^{3+}$).

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 0 - 10	Site 1: 20 - 30	Site 3: 0 - 10	Site 3: 20 - 30	Site 3: 50 - 60
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-001	EB1627912-002	EB1627912-003	EB1627912-004	EB1627912-005
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.5	6.5	5.4	5.1	5.4
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	13	16	43	21	13
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 0 - 10	Site 1: 20 - 30	Site 3: 0 - 10	Site 3: 20 - 30	Site 3: 50 - 60
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-001	EB1627912-002	EB1627912-003	EB1627912-004	EB1627912-005
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	16.6	21.4	23.7	20.2	22.3
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Yellowish Brown	Dark Yellowish Brown	Brown	Brown	Dark Yellowish Brown
Texture	----	-	-	Clay Loam	Clay Loam	Sandy Loam	Sandy Clay Loam	Sandy Clay Loam
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	15	19	21	25	26
Silt (2-20 µm)	----	1	%	15	12	21	17	10
Fine Sand (0.02-0.2 mm)	----	1	%	34	49	12	10	4
Coarse Sand (0.2-2.0 mm)	----	1	%	36	20	41	41	58
Gravel (>2mm)	----	1	%	<1	<1	5	7	2
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.58	2.50	2.59	2.48	2.52
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	0.8	4.8	6.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 0 - 10	Site 1: 20 - 30	Site 3: 0 - 10	Site 3: 20 - 30	Site 3: 50 - 60
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-001	EB1627912-002	EB1627912-003	EB1627912-004	EB1627912-005
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	----	----	<0.1	<0.1	<0.1
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	22.2	21.0	5.7	1.6	1.2
Exchangeable Magnesium	----	0.1	meq/100g	11.9	9.6	3.2	3.2	10.2
Exchangeable Potassium	----	0.1	meq/100g	0.3	0.2	0.2	<0.1	0.2
Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.3	<0.1	<0.1	0.2
Cation Exchange Capacity	----	0.1	meq/100g	----	----	9.9	9.6	18.3
Cation Exchange Capacity	----	0.1	meq/100g	34.6	31.0	----	----	----
Exchangeable Sodium Percent	----	0.1	%	0.3	0.8	0.7	1.8	1.9
Calcium/Magnesium Ratio	----	0.1	-	1.9	2.2	1.8	0.5	0.1
Magnesium/Potassium Ratio	----	0.1	-	41.7	39.7	12.5	----	66.8
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	29800	32300	16400	24800	30900
Arsenic	7440-38-2	5	mg/kg	7	9	<5	<5	<5
Barium	7440-39-3	10	mg/kg	30	60	70	60	80
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	72	76	30	47	48
Cobalt	7440-48-4	2	mg/kg	27	24	31	44	15
Copper	7440-50-8	5	mg/kg	29	27	14	19	26
Iron	7439-89-6	50	mg/kg	55600	65100	42100	58400	40700
Lead	7439-92-1	5	mg/kg	8	8	6	10	7

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 0 - 10	Site 1: 20 - 30	Site 3: 0 - 10	Site 3: 20 - 30	Site 3: 50 - 60
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-001	EB1627912-002	EB1627912-003	EB1627912-004	EB1627912-005
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	746	2750	1240	1330	275
Nickel	7440-02-0	2	mg/kg	56	57	15	24	36
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	60	88	26	11	10
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	98	115	78	102	74
Zinc	7440-66-6	5	mg/kg	83	81	43	54	53
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.1	<0.1	<0.1	0.2	0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	450	340	1020	610	300
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	450	340	1020	610	300
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	511	597	223	137	115
EP004: Organic Matter								
Organic Matter	----	0.5	%	<0.5	<0.5	3.0	0.9	<0.5
Total Organic Carbon	----	0.5	%	<0.5	<0.5	1.7	0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 0 - 10	Site 1: 20 - 30	Site 3: 0 - 10	Site 3: 20 - 30	Site 3: 50 - 60
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-001	EB1627912-002	EB1627912-003	EB1627912-004	EB1627912-005
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	115	118	112	115	109
Toluene-D8	2037-26-5	0.2	%	107	111	106	105	101
4-Bromofluorobenzene	460-00-4	0.2	%	119	121	112	112	110

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 3: 90 - 100	Site 5: 0 - 10	Site 5: 20 - 30	Site 5: 50 - 60	Site 5: 90 - 100
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-006	EB1627912-007	EB1627912-008	EB1627912-009	EB1627912-010
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.5	5.1	5.1	5.2	5.3
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	12	32	26	29	22
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 3: 90 - 100	Site 5: 0 - 10	Site 5: 20 - 30	Site 5: 50 - 60	Site 5: 90 - 100
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-006	EB1627912-007	EB1627912-008	EB1627912-009	EB1627912-010
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	20.0	34.9	29.1	36.6	32.1
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown	Brown	Dark Yellowish Brown
Texture	----	-	-	Sandy Loam	Clay Loam	Clay Loam	Clay Loam	Clay Loam
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	18	27	33	33	25
Silt (2-20 µm)	----	1	%	10	35	32	43	47
Fine Sand (0.02-0.2 mm)	----	1	%	4	16	16	23	27
Coarse Sand (0.2-2.0 mm)	----	1	%	54	13	17	<1	<1
Gravel (>2mm)	----	1	%	14	9	2	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.45	2.39	2.50	2.49	2.35
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	6.1	9.0	9.6	10.1	8.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 3: 90 - 100	Site 5: 0 - 10	Site 5: 20 - 30	Site 5: 50 - 60	Site 5: 90 - 100
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-006	EB1627912-007	EB1627912-008	EB1627912-009	EB1627912-010
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	1.8	9.4	8.6	8.1	11.5
Exchangeable Magnesium	----	0.1	meq/100g	9.3	5.7	5.4	3.8	5.4
Exchangeable Potassium	----	0.1	meq/100g	0.2	0.6	0.5	0.4	0.4
Exchangeable Sodium	----	0.1	meq/100g	0.2	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	17.6	24.7	24.1	22.4	25.3
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	2.2	0.3	0.3	0.3	0.2
Calcium/Magnesium Ratio	----	0.1	-	0.2	1.6	1.6	2.1	2.1
Magnesium/Potassium Ratio	----	0.1	-	60.4	10.1	10.8	9.8	14.6
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	26200	36200	32200	35700	34800
Arsenic	7440-38-2	5	mg/kg	<5	14	12	12	13
Barium	7440-39-3	10	mg/kg	70	30	30	40	40
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	61	48	43	46	46
Cobalt	7440-48-4	2	mg/kg	13	22	19	24	22
Copper	7440-50-8	5	mg/kg	35	34	32	29	37
Iron	7439-89-6	50	mg/kg	44400	61700	57000	52300	57700
Lead	7439-92-1	5	mg/kg	6	13	13	12	12

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 3: 90 - 100	Site 5: 0 - 10	Site 5: 20 - 30	Site 5: 50 - 60	Site 5: 90 - 100
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-006	EB1627912-007	EB1627912-008	EB1627912-009	EB1627912-010
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	142	626	549	763	704
Nickel	7440-02-0	2	mg/kg	38	48	43	42	53
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	14	18	17	24	25
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	85	77	66	79	73
Zinc	7440-66-6	5	mg/kg	49	95	84	84	98
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	260	1500	1740	2850	1220
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	260	1500	1740	2850	1220
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	102	375	335	451	281
EP004: Organic Matter								
Organic Matter	----	0.5	%	<0.5	1.5	1.9	3.3	1.4
Total Organic Carbon	----	0.5	%	<0.5	0.9	1.1	1.9	0.8
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 3: 90 - 100	Site 5: 0 - 10	Site 5: 20 - 30	Site 5: 50 - 60	Site 5: 90 - 100
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-006	EB1627912-007	EB1627912-008	EB1627912-009	EB1627912-010
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	111	105	106	105	108
Toluene-D8	2037-26-5	0.2	%	104	94.9	96.5	96.2	98.5
4-Bromofluorobenzene	460-00-4	0.2	%	112	105	106	106	108

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 0 - 10	Site 6: 20 - 30	Site 6: 50 - 60	Site 6: 90 - 100	Site 7: 0 - 10
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-011	EB1627912-012	EB1627912-013	EB1627912-014	EB1627912-015
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.6	5.7	5.2	5.3	5.1
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	140	70	29	28	22
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 0 - 10	Site 6: 20 - 30	Site 6: 50 - 60	Site 6: 90 - 100	Site 7: 0 - 10
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-011	EB1627912-012	EB1627912-013	EB1627912-014	EB1627912-015
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	32.7	29.4	26.2	24.3	27.9
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Brown	Brown	Dark Yellowish Brown	Dark Yellowish Brown	Yellowish Brown
Texture	----	-	-	Sandy Clay Loam	Sandy Clay Loam	Clay Loam	Sandy Clay Loam	Silty Clay
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	35	39	51	30	37
Silt (2-20 µm)	----	1	%	23	28	28	18	45
Fine Sand (0.02-0.2 mm)	----	1	%	20	17	11	17	10
Coarse Sand (0.2-2.0 mm)	----	1	%	19	16	10	35	7
Gravel (>2mm)	----	1	%	3	<1	<1	<1	1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.34	2.51	2.64	2.66	2.48
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	1.8	3.8	5.8	7.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 0 - 10	Site 6: 20 - 30	Site 6: 50 - 60	Site 6: 90 - 100	Site 7: 0 - 10
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-011	EB1627912-012	EB1627912-013	EB1627912-014	EB1627912-015
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	----	<0.1	<0.1	<0.1	<0.1
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	20.7	12.6	8.4	4.9	11.4
Exchangeable Magnesium	----	0.1	meq/100g	10.9	11.3	15.0	13.1	8.2
Exchangeable Potassium	----	0.1	meq/100g	0.5	0.5	0.3	0.2	0.7
Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.2	0.4	0.7	0.1
Cation Exchange Capacity	----	0.1	meq/100g	----	26.4	27.9	24.7	27.4
Cation Exchange Capacity	----	0.1	meq/100g	32.2	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	0.3	0.7	1.8	3.5	0.7
Calcium/Magnesium Ratio	----	0.1	-	1.9	1.1	0.6	0.4	1.4
Magnesium/Potassium Ratio	----	0.1	-	20.3	21.8	46.9	55.2	11.0
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	20	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	23500	25000	25200	23600	17100
Arsenic	7440-38-2	5	mg/kg	7	7	8	7	5
Barium	7440-39-3	10	mg/kg	120	90	70	60	40
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	49	49	51	50	39
Cobalt	7440-48-4	2	mg/kg	27	31	21	44	6
Copper	7440-50-8	5	mg/kg	25	24	32	24	35
Iron	7439-89-6	50	mg/kg	56800	54700	55800	45500	48700
Lead	7439-92-1	5	mg/kg	10	12	10	12	8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 0 - 10	Site 6: 20 - 30	Site 6: 50 - 60	Site 6: 90 - 100	Site 7: 0 - 10
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-011	EB1627912-012	EB1627912-013	EB1627912-014	EB1627912-015
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	1030	942	475	661	68
Nickel	7440-02-0	2	mg/kg	36	35	35	36	10
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	86	52	43	32	46
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	93	98	90	82	69
Zinc	7440-66-6	5	mg/kg	69	62	68	63	34
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	4.2	3.8	1.1	0.2	0.5
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	3100	1870	1390	490	1370
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	3100	1870	1390	490	1370
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	308	270	207	169	235
EP004: Organic Matter								
Organic Matter	----	0.5	%	7.0	2.5	2.0	2.2	2.5
Total Organic Carbon	----	0.5	%	4.1	1.4	1.2	1.2	1.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 0 - 10	Site 6: 20 - 30	Site 6: 50 - 60	Site 6: 90 - 100	Site 7: 0 - 10
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-011	EB1627912-012	EB1627912-013	EB1627912-014	EB1627912-015
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	106	109	113	109	111
Toluene-D8	2037-26-5	0.2	%	94.1	97.3	100	103	98.4
4-Bromofluorobenzene	460-00-4	0.2	%	99.2	107	108	110	107

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 20 - 30	Site 7: 50 - 60	Site 7: 90 - 100	Site 8: 0 - 10	Site 8: 20 - 30
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-016	EB1627912-017	EB1627912-018	EB1627912-019	EB1627912-020
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.0	4.8	4.8	6.6	6.1
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	24	28	30	83	34
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 20 - 30	Site 7: 50 - 60	Site 7: 90 - 100	Site 8: 0 - 10	Site 8: 20 - 30
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-016	EB1627912-017	EB1627912-018	EB1627912-019	EB1627912-020
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	26.5	26.7	27.9	26.1	25.2
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Brownish Yellow	Brownish Yellow	Brownish Yellow	Dark Greyish Brown	Dark Brown
Texture	----	-	-	Silty Clay	Silty Clay	Silty Clay	Sandy Clay Loam	Sandy Loam
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	53	49	55	22	21
Silt (2-20 µm)	----	1	%	31	32	28	21	17
Fine Sand (0.02-0.2 mm)	----	1	%	9	11	8	44	50
Coarse Sand (0.2-2.0 mm)	----	1	%	7	8	8	13	12
Gravel (>2mm)	----	1	%	<1	<1	1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.46	2.58	2.72	2.65	2.54
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	10.0	10.6	17.9	----	----
Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	<0.1	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 20 - 30	Site 7: 50 - 60	Site 7: 90 - 100	Site 8: 0 - 10	Site 8: 20 - 30
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-016	EB1627912-017	EB1627912-018	EB1627912-019	EB1627912-020
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	10.7	4.9	0.8	17.6	15.1
Exchangeable Magnesium	----	0.1	meq/100g	6.2	6.4	5.2	7.0	7.9
Exchangeable Potassium	----	0.1	meq/100g	0.6	0.4	0.6	0.4	0.3
Exchangeable Sodium	----	0.1	meq/100g	0.2	0.3	0.3	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	27.7	22.6	24.8	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	25.2	23.4
Exchangeable Sodium Percent	----	0.1	%	1.0	2.4	3.8	0.2	0.3
Calcium/Magnesium Ratio	----	0.1	-	1.7	0.8	0.2	2.5	1.9
Magnesium/Potassium Ratio	----	0.1	-	11.2	14.6	9.1	15.7	29.0
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	17700	15500	17400	19900	20900
Arsenic	7440-38-2	5	mg/kg	5	7	7	6	6
Barium	7440-39-3	10	mg/kg	30	30	40	40	40
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	39	37	42	50	54
Cobalt	7440-48-4	2	mg/kg	5	4	5	21	23
Copper	7440-50-8	5	mg/kg	36	30	36	28	32
Iron	7439-89-6	50	mg/kg	43200	53100	62200	45800	49200
Lead	7439-92-1	5	mg/kg	8	8	9	9	10
Manganese	7439-96-5	5	mg/kg	41	51	46	647	631
Nickel	7440-02-0	2	mg/kg	9	8	10	46	50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 20 - 30	Site 7: 50 - 60	Site 7: 90 - 100	Site 8: 0 - 10	Site 8: 20 - 30
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-016	EB1627912-017	EB1627912-018	EB1627912-019	EB1627912-020
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	48	28	9	45	40
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	66	84	87	69	72
Zinc	7440-66-6	5	mg/kg	30	36	37	76	80
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.2	<0.1	<0.1	0.7	0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1360	1280	1010	1050	680
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1360	1280	1010	1050	680
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	225	260	248	525	498
EP004: Organic Matter								
Organic Matter	----	0.5	%	2.0	1.9	1.7	2.6	2.7
Total Organic Carbon	----	0.5	%	1.2	1.1	1.0	1.5	1.6
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 20 - 30	Site 7: 50 - 60	Site 7: 90 - 100	Site 8: 0 - 10	Site 8: 20 - 30
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-016	EB1627912-017	EB1627912-018	EB1627912-019	EB1627912-020
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	110	108	116	113	116
Toluene-D8	2037-26-5	0.2	%	100	101	98.9	100	101
4-Bromofluorobenzene	460-00-4	0.2	%	108	109	105	106	112

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 50 - 60	Site 8: 90 - 100	Site 9: 0 - 10	Site 9: 20 - 30	Site 9: 50 - 60
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-021	EB1627912-022	EB1627912-023	EB1627912-024	EB1627912-025
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.8	6.1	6.9	6.9	6.0
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	41	24	61	59	46
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	7.9	7.2	5.2
pH OX (23B)	----	0.1	pH Unit	----	----	7.7	6.6	5.8
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	<2	<2	18
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	<2	<2	19
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	<0.020	<0.020	0.029
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	<0.020	<0.020	0.030
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	<0.020	<0.020	<0.020
Peroxide Sulfur (23De)	----	0.02	% S	----	----	0.023	0.040	0.024
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	0.023	0.040	0.024
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	14	25	15
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	0.632	0.476	0.274
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	0.736	0.497	0.274
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	0.105	0.022	<0.020
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	52	11	<10
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	0.084	<0.020	<0.020
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	0.077	0.093	0.093
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	0.104	0.116	0.104
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	0.027	0.023	<0.020
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	22	19	<10
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	0.036	0.031	<0.020
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 50 - 60	Site 8: 90 - 100	Site 9: 0 - 10	Site 9: 20 - 30	Site 9: 50 - 60
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-021	EB1627912-022	EB1627912-023	EB1627912-024	EB1627912-025
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	0.748	0.332	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	149	66	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	0.239	0.106	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	----	----	<0.02	<0.02	0.05
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	<10	<10	33
Liming Rate	----	1	kg CaCO3/t	----	----	<1	<1	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	0.02	0.04	0.05
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	14	25	33
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	1	2	2
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	4.5	6.4	6.1
ø pH (Fox)	----	0.1	pH Unit	----	----	4.1	4.4	3.7
ø Reaction Rate	----	1	-	----	----	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	31.7	26.0	31.7	37.4	36.4
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Greyish	Dark Greyish	Dark Greyish Brown	Greyish Brown	Greyish Brown
Texture	----	-	-	Clay Loam	Sandy Loam	Clay Loam	Silty Clay	Silty Clay
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	26	21	44	39	46
Silt (2-20 µm)	----	1	%	33	14	34	33	29
Fine Sand (0.02-0.2 mm)	----	1	%	39	55	18	22	22
Coarse Sand (0.2-2.0 mm)	----	1	%	2	10	4	6	3
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.53	2.62	2.68	2.79	3.15
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	1.7	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	<0.1	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 50 - 60	Site 8: 90 - 100	Site 9: 0 - 10	Site 9: 20 - 30	Site 9: 50 - 60
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-021	EB1627912-022	EB1627912-023	EB1627912-024	EB1627912-025
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	18.1	14.9	19.9	15.2	11.5
Exchangeable Magnesium	----	0.1	meq/100g	9.6	8.1	7.7	10.2	10.0
Exchangeable Potassium	----	0.1	meq/100g	0.4	0.2	0.3	0.4	0.4
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	29.8	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	23.3	28.0	25.9	22.0
Exchangeable Sodium Percent	----	0.1	%	0.3	0.1	0.2	0.4	0.4
Calcium/Magnesium Ratio	----	0.1	-	1.9	1.8	2.6	1.5	1.2
Magnesium/Potassium Ratio	----	0.1	-	24.5	32.4	22.2	27.1	26.3
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	22500	20700	24600	25200	28000
Arsenic	7440-38-2	5	mg/kg	8	6	8	10	11
Barium	7440-39-3	10	mg/kg	40	40	40	40	50
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	54	54	46	48	52
Cobalt	7440-48-4	2	mg/kg	24	22	21	24	23
Copper	7440-50-8	5	mg/kg	36	28	32	35	35
Iron	7439-89-6	50	mg/kg	48900	44600	50300	53900	57600
Lead	7439-92-1	5	mg/kg	10	9	12	13	12
Manganese	7439-96-5	5	mg/kg	920	588	577	855	630
Nickel	7440-02-0	2	mg/kg	58	51	48	53	52

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 50 - 60	Site 8: 90 - 100	Site 9: 0 - 10	Site 9: 20 - 30	Site 9: 50 - 60
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-021	EB1627912-022	EB1627912-023	EB1627912-024	EB1627912-025
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	42	37	33	37	30
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	85	82	86	87	95
Zinc	7440-66-6	5	mg/kg	85	77	82	91	88
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	960	570	1230	1030	1120
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	960	570	1230	1030	1120
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	705	561	536	505	556
EP004: Organic Matter								
Organic Matter	----	0.5	%	2.5	1.7	2.5	2.2	2.2
Total Organic Carbon	----	0.5	%	1.5	1.0	31.4	1.3	1.3
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 50 - 60	Site 8: 90 - 100	Site 9: 0 - 10	Site 9: 20 - 30	Site 9: 50 - 60
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-021	EB1627912-022	EB1627912-023	EB1627912-024	EB1627912-025
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	104	89.5	85.6	84.1	102
Toluene-D8	2037-26-5	0.2	%	87.5	102	87.5	106	102
4-Bromofluorobenzene	460-00-4	0.2	%	109	106	104	124	119

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 9: 90 - 100	Site 10: 0 - 10	Site 10: 20 - 30	Site 10: 50 - 60	Site 10: 90 - 100
			Client sampling date / time	16-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-026	EB1627912-027	EB1627912-028	EB1627912-029	EB1627912-030
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.1	4.9	4.7	4.8	4.7
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	22	19	11	7	7
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	4.8	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	5.4	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	19	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	20	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.031	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	0.032	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	0.024	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.024	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	15	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.253	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	0.253	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.118	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.118	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 9: 90 - 100	Site 10: 0 - 10	Site 10: 20 - 30	Site 10: 50 - 60	Site 10: 90 - 100
			Client sampling date / time	16-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-026	EB1627912-027	EB1627912-028	EB1627912-029	EB1627912-030
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	0.05	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	34	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	2	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	34	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	3.9	----	----	----	----
ø Reaction Rate	----	1	-	4	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	38.1	33.9	33.5	32.5	32.8
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Greyish Brown	Dark Greyish Brown	Reddish Brown	Yellowish Red	Reddish Brown
Texture	----	-	-	Silty Clay	Sandy Clay Loam	Silty Clay Loam	Clay Loam	Clay Loam
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	47	48	56	51	45
Silt (2-20 µm)	----	1	%	40	18	13	14	14
Fine Sand (0.02-0.2 mm)	----	1	%	12	26	22	24	24
Coarse Sand (0.2-2.0 mm)	----	1	%	1	8	9	11	17
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.55	2.64	2.82	2.59	2.58
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	4.0	3.4	3.3	5.5
Exchangeable Aluminium	----	0.1	meq/100g	----	<0.1	0.1	0.1	0.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 9: 90 - 100	Site 10: 0 - 10	Site 10: 20 - 30	Site 10: 50 - 60	Site 10: 90 - 100
			Client sampling date / time	16-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-026	EB1627912-027	EB1627912-028	EB1627912-029	EB1627912-030
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	11.4	0.5	<0.1	<0.1	<0.1
Exchangeable Magnesium	----	0.1	meq/100g	6.2	0.4	0.1	<0.1	0.1
Exchangeable Potassium	----	0.1	meq/100g	0.4	0.1	<0.1	<0.1	<0.1
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	----	5.0	3.5	3.3	5.6
Cation Exchange Capacity	----	0.1	meq/100g	18.1	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	0.3	1.7	7.1	9.2	7.2
Calcium/Magnesium Ratio	----	0.1	-	1.8	1.2	<0.1	----	<0.1
Magnesium/Potassium Ratio	----	0.1	-	16.1	3.7	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	25400	43700	51000	50800	61400
Arsenic	7440-38-2	5	mg/kg	5	<5	<5	<5	5
Barium	7440-39-3	10	mg/kg	40	40	50	50	70
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	48	43	45	49	63
Cobalt	7440-48-4	2	mg/kg	20	5	6	8	6
Copper	7440-50-8	5	mg/kg	32	18	23	24	28
Iron	7439-89-6	50	mg/kg	45300	60900	68800	70600	72800
Lead	7439-92-1	5	mg/kg	11	10	13	15	16
Manganese	7439-96-5	5	mg/kg	457	104	133	233	176
Nickel	7440-02-0	2	mg/kg	48	18	21	22	31

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 9: 90 - 100	Site 10: 0 - 10	Site 10: 20 - 30	Site 10: 50 - 60	Site 10: 90 - 100
			Client sampling date / time	16-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-026	EB1627912-027	EB1627912-028	EB1627912-029	EB1627912-030
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	27	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	90	185	213	204	198
Zinc	7440-66-6	5	mg/kg	90	30	32	30	33
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1690	1260	720	590	480
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1690	1260	720	590	480
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	503	251	190	189	211
EP004: Organic Matter								
Organic Matter	----	0.5	%	3.5	3.2	1.4	1.0	0.9
Total Organic Carbon	----	0.5	%	2.0	1.8	0.8	0.6	0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 9: 90 - 100	Site 10: 0 - 10	Site 10: 20 - 30	Site 10: 50 - 60	Site 10: 90 - 100
			Client sampling date / time	16-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-026	EB1627912-027	EB1627912-028	EB1627912-029	EB1627912-030
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	97.1	105	89.4	95.3	89.7
Toluene-D8	2037-26-5	0.2	%	101	109	83.4	109	97.9
4-Bromofluorobenzene	460-00-4	0.2	%	99.8	111	98.9	116	97.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 0 - 10	Site 12: 20 - 30	Site 12: 50 - 60	Site 12: 90 - 100	Site 14: 0 - 10
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-031	EB1627912-032	EB1627912-033	EB1627912-034	EB1627912-035
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	4.6	4.6	4.6	4.6	5.0
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	23	18	14	17	39
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 0 - 10	Site 12: 20 - 30	Site 12: 50 - 60	Site 12: 90 - 100	Site 14: 0 - 10
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-031	EB1627912-032	EB1627912-033	EB1627912-034	EB1627912-035
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	37.7	36.2	35.3	34.3	32.9
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Strong Brown	Strong Brown	Yellowish Red	Yellowish Brown	Dark Yellowish Brown
Texture	----	-	-	Clay Loam	Clay Loam	Silty Clay	Clay Loam	Clay Loam
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	46	49	41	35	39
Silt (2-20 µm)	----	1	%	34	37	35	23	28
Fine Sand (0.02-0.2 mm)	----	1	%	13	13	23	39	18
Coarse Sand (0.2-2.0 mm)	----	1	%	7	<1	<1	3	14
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.50	2.54	2.56	2.66	2.01
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	16.8	19.5	18.6	20.2	10.8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 0 - 10	Site 12: 20 - 30	Site 12: 50 - 60	Site 12: 90 - 100	Site 14: 0 - 10
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-031	EB1627912-032	EB1627912-033	EB1627912-034	EB1627912-035
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	14.7	16.7	16.4	17.2	7.2
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	0.3	<0.1	<0.1	<0.1	1.6
Exchangeable Magnesium	----	0.1	meq/100g	0.8	0.7	0.5	0.6	1.9
Exchangeable Potassium	----	0.1	meq/100g	0.3	0.3	0.3	0.3	0.5
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	18.2	20.5	19.4	21.1	14.8
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	2.3	2.3	3.0	6.3	1.0
Calcium/Magnesium Ratio	----	0.1	-	0.4	<0.1	<0.1	<0.1	0.8
Magnesium/Potassium Ratio	----	0.1	-	2.2	2.4	2.0	1.8	3.5
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	37600	39900	39900	42100	44700
Arsenic	7440-38-2	5	mg/kg	8	9	9	<5	6
Barium	7440-39-3	10	mg/kg	20	20	20	30	80
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	41	44	38	49	57
Cobalt	7440-48-4	2	mg/kg	7	10	13	11	15
Copper	7440-50-8	5	mg/kg	34	40	36	37	20
Iron	7439-89-6	50	mg/kg	70100	66100	63700	38300	49100
Lead	7439-92-1	5	mg/kg	12	14	15	14	10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 0 - 10	Site 12: 20 - 30	Site 12: 50 - 60	Site 12: 90 - 100	Site 14: 0 - 10
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-031	EB1627912-032	EB1627912-033	EB1627912-034	EB1627912-035
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	116	192	333	125	284
Nickel	7440-02-0	2	mg/kg	30	38	35	42	36
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	<2	<2	<2	<2	7
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	100	103	91	88	122
Zinc	7440-66-6	5	mg/kg	62	70	68	72	58
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.2	0.3	0.6
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	2060	1140	890	830	3980
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	2060	1140	890	830	3980
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	440	372	413	197	422
EP004: Organic Matter								
Organic Matter	----	0.5	%	4.0	1.2	0.7	0.9	5.5
Total Organic Carbon	----	0.5	%	2.3	0.7	<0.5	0.5	3.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 0 - 10	Site 12: 20 - 30	Site 12: 50 - 60	Site 12: 90 - 100	Site 14: 0 - 10
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-031	EB1627912-032	EB1627912-033	EB1627912-034	EB1627912-035
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	90.3	92.9	87.9	94.6	88.0
Toluene-D8	2037-26-5	0.2	%	83.9	86.8	113	97.2	97.5
4-Bromofluorobenzene	460-00-4	0.2	%	103	106	114	114	106

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 20 - 30	Site 14: 50 - 60	Site 15: 0 - 10	Site 15: 20 - 30	Site 15: 50 - 60
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-036	EB1627912-037	EB1627912-038	EB1627912-039	EB1627912-040
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	4.7	4.8	5.8	6.1	6.3
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	24	15	45	13	11
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 20 - 30	Site 14: 50 - 60	Site 15: 0 - 10	Site 15: 20 - 30	Site 15: 50 - 60
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-036	EB1627912-037	EB1627912-038	EB1627912-039	EB1627912-040
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	28.3	25.6	19.1	13.0	14.2
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown
Texture	----	-	-	Clay Loam	Silty Clay Loam	Loam	Sandy Loam	Sandy Loam
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	46	44	29	14	15
Silt (2-20 µm)	----	1	%	25	19	15	5	5
Fine Sand (0.02-0.2 mm)	----	1	%	16	35	16	16	19
Coarse Sand (0.2-2.0 mm)	----	1	%	13	2	40	65	61
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.60	2.67	2.53	2.55	2.64
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	14.7	21.9	0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 20 - 30	Site 14: 50 - 60	Site 15: 0 - 10	Site 15: 20 - 30	Site 15: 50 - 60
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-036	EB1627912-037	EB1627912-038	EB1627912-039	EB1627912-040
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	13.7	19.6	0.2	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	0.8	0.4	6.4	6.3	8.9
Exchangeable Magnesium	----	0.1	meq/100g	1.3	1.8	3.2	3.3	3.4
Exchangeable Potassium	----	0.1	meq/100g	0.2	0.3	0.6	0.2	0.2
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	17.0	24.4	10.7	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	9.9	12.6
Exchangeable Sodium Percent	----	0.1	%	1.4	1.8	0.6	0.8	0.3
Calcium/Magnesium Ratio	----	0.1	-	0.6	0.2	2.0	1.9	2.6
Magnesium/Potassium Ratio	----	0.1	-	7.1	5.3	5.5	16.6	17.2
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	49700	33800	28200	25300	23500
Arsenic	7440-38-2	5	mg/kg	5	10	<5	<5	<5
Barium	7440-39-3	10	mg/kg	120	40	160	120	100
Beryllium	7440-41-7	1	mg/kg	<1	1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	64	50	40	34	37
Cobalt	7440-48-4	2	mg/kg	16	31	18	18	18
Copper	7440-50-8	5	mg/kg	21	32	18	24	25
Iron	7439-89-6	50	mg/kg	54500	58100	41300	38800	39800
Lead	7439-92-1	5	mg/kg	9	13	9	8	8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 20 - 30	Site 14: 50 - 60	Site 15: 0 - 10	Site 15: 20 - 30	Site 15: 50 - 60
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-036	EB1627912-037	EB1627912-038	EB1627912-039	EB1627912-040
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	248	1010	681	625	610
Nickel	7440-02-0	2	mg/kg	39	50	37	41	41
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	3	<2	34	36	45
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	129	87	116	96	100
Zinc	7440-66-6	5	mg/kg	64	84	61	60	64
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.1	<0.1	<0.1	0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	960	750	1510	300	230
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	960	750	1510	300	230
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	219	451	447	397	523
EP004: Organic Matter								
Organic Matter	----	0.5	%	0.9	1.7	1.9	0.9	<0.5
Total Organic Carbon	----	0.5	%	0.5	1.0	1.1	0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 20 - 30	Site 14: 50 - 60	Site 15: 0 - 10	Site 15: 20 - 30	Site 15: 50 - 60
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-036	EB1627912-037	EB1627912-038	EB1627912-039	EB1627912-040
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	116	110	108	115	118
Toluene-D8	2037-26-5	0.2	%	102	96.6	91.4	100	100
4-Bromofluorobenzene	460-00-4	0.2	%	111	109	102	109	109

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 90 - 100	Site 15: 130 - 140	Site 15: 160 - 170	Site 17: 0 - 10	Site 18: 0 - 10
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-041	EB1627912-042	EB1627912-043	EB1627912-044	EB1627912-045
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.4	6.6	6.1	7.1	7.2
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	16	15	38	16	695
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 90 - 100	Site 15: 130 - 140	Site 15: 160 - 170	Site 17: 0 - 10	Site 18: 0 - 10
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-041	EB1627912-042	EB1627912-043	EB1627912-044	EB1627912-045
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	6.2	6.3	6.4	6.9
ø pH (Fox)	----	0.1	pH Unit	----	5.2	6.2	5.1	2.4
ø Reaction Rate	----	1	-	----	3	4	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	19.6	25.0	29.4	7.6	33.1
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Yellowish Brown	Dark Yellowsih Brown	Dark Yellowish Brown	Very Dark Brown	Black
Texture	----	-	-	Sandy Loam	Clay Loam	SIlty Clay	Sand	Sandy Loam
Emerson Class Number	EC/TC	-	-	4	4	4	8	3
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	16	22	52	10	24
Silt (2-20 µm)	----	1	%	5	15	30	1	8
Fine Sand (0.02-0.2 mm)	----	1	%	28	59	13	20	25
Coarse Sand (0.2-2.0 mm)	----	1	%	51	4	5	69	42
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.65	2.76	2.67	2.96	2.58
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 90 - 100	Site 15: 130 - 140	Site 15: 160 - 170	Site 17: 0 - 10	Site 18: 0 - 10
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-041	EB1627912-042	EB1627912-043	EB1627912-044	EB1627912-045
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	9.1	13.2	17.0	1.5	----
Exchangeable Magnesium	----	0.1	meq/100g	4.4	6.7	10.8	2.7	----
Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.3	0.4	----
Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.1	0.2	<0.1	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	13.7	20.3	28.3	4.6	----
Exchangeable Sodium Percent	----	0.1	%	0.5	0.5	0.5	1.2	----
Calcium/Magnesium Ratio	----	0.1	-	2.1	2.0	1.6	0.6	----
Magnesium/Potassium Ratio	----	0.1	-	27.7	39.0	34.7	7.0	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	4.3
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	8.5
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	1.0
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	1.8
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	15.6
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	11.5
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	0.5
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	8.4
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	1270
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	20900	23600	31500	10600	20700
Arsenic	7440-38-2	5	mg/kg	<5	5	8	<5	<5
Barium	7440-39-3	10	mg/kg	80	70	80	<10	10
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	35	43	52	47	42
Cobalt	7440-48-4	2	mg/kg	17	20	42	15	18
Copper	7440-50-8	5	mg/kg	24	29	28	8	19
Iron	7439-89-6	50	mg/kg	38100	44100	68100	44800	41800
Lead	7439-92-1	5	mg/kg	8	10	18	5	6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 90 - 100	Site 15: 130 - 140	Site 15: 160 - 170	Site 17: 0 - 10	Site 18: 0 - 10
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-041	EB1627912-042	EB1627912-043	EB1627912-044	EB1627912-045
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	524	602	1840	463	450
Nickel	7440-02-0	2	mg/kg	36	39	31	24	35
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	7	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	47	70	61	<2	40
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	84	89	124	168	85
Zinc	7440-66-6	5	mg/kg	63	75	78	82	71
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.2	<0.1	<0.1	0.8	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	260	300	640	210	1150
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	260	300	640	210	1150
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	581	547	273	502	762
EP004: Organic Matter								
Organic Matter	----	0.5	%	0.5	0.5	0.5	1.4	1.4
Total Organic Carbon	----	0.5	%	<0.5	<0.5	<0.5	0.8	0.8
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 90 - 100	Site 15: 130 - 140	Site 15: 160 - 170	Site 17: 0 - 10	Site 18: 0 - 10
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-041	EB1627912-042	EB1627912-043	EB1627912-044	EB1627912-045
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	100	95.8	93.2	106	86.2
Toluene-D8	2037-26-5	0.2	%	107	88.2	105	118	96.3
4-Bromofluorobenzene	460-00-4	0.2	%	121	115	102	118	121

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 19: 50 - 60	Site 22: 0 - 10	Site 22: 20 - 30	Site 22: 50 - 60	Site 22: 90 - 100
			Client sampling date / time	20-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-046	EB1627912-047	EB1627912-048	EB1627912-049	EB1627912-050
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.4	5.5	5.4	6.5	6.3
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	28	50	48	49	53
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	4.7
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	5.9
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	21
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	23
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	0.034
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	0.037
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	<0.020
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	<0.020
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	<0.020
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	<0.020
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	<10
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	0.243
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	0.243
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	<0.020
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	<10
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	<0.020
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	0.213
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	0.213
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	<0.020
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	<10
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	<0.020
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 19: 50 - 60	Site 22: 0 - 10	Site 22: 20 - 30	Site 22: 50 - 60	Site 22: 90 - 100
			Client sampling date / time	20-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-046	EB1627912-047	EB1627912-048	EB1627912-049	EB1627912-050
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	1.5
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	21
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	21
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	2
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	5.6	5.8	6.8	6.6
ø pH (Fox)	----	0.1	pH Unit	3.4	3.8	3.9	4.5	4.6
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	27.6	29.2	30.1	32.9	32.8
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Very Dark Greyish Brown	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown
Texture	----	-	-	Sandy Loam	Silty Clay	Silty Clay	Silty Clay	Silty Clay
Emerson Class Number	EC/TC	-	-	4	4	4	3	3
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	20	38	46	46	46
Silt (2-20 µm)	----	1	%	7	40	32	31	33
Fine Sand (0.02-0.2 mm)	----	1	%	30	21	19	22	20
Coarse Sand (0.2-2.0 mm)	----	1	%	43	1	3	<1	1
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.71	2.41	2.57	2.64	2.61
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	2.7	3.6	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 19: 50 - 60	Site 22: 0 - 10	Site 22: 20 - 30	Site 22: 50 - 60	Site 22: 90 - 100
			Client sampling date / time	20-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-046	EB1627912-047	EB1627912-048	EB1627912-049	EB1627912-050
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	----	1.7	2.9	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	5.6	13.3	9.4	9.7	11.2
Exchangeable Magnesium	----	0.1	meq/100g	3.8	11.9	12.9	15.3	15.6
Exchangeable Potassium	----	0.1	meq/100g	<0.1	1.5	1.1	0.8	0.6
Exchangeable Sodium	----	0.1	meq/100g	0.1	0.2	0.8	3.0	2.9
Cation Exchange Capacity	----	0.1	meq/100g	----	29.6	27.8	----	----
Cation Exchange Capacity	----	0.1	meq/100g	9.6	----	----	28.8	30.3
Exchangeable Sodium Percent	----	0.1	%	1.2	0.9	3.1	10.6	9.5
Calcium/Magnesium Ratio	----	0.1	-	1.5	1.1	0.7	0.6	0.7
Magnesium/Potassium Ratio	----	0.1	-	----	8.1	12.0	19.0	24.2
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	10	20	20
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	15100	26500	27300	26700	26500
Arsenic	7440-38-2	5	mg/kg	<5	6	8	9	8
Barium	7440-39-3	10	mg/kg	10	50	40	50	50
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	48	54	55	56	56
Cobalt	7440-48-4	2	mg/kg	14	22	23	24	19
Copper	7440-50-8	5	mg/kg	10	35	42	41	42
Iron	7439-89-6	50	mg/kg	41900	50500	52300	53500	53300
Lead	7439-92-1	5	mg/kg	7	11	10	10	11

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 19: 50 - 60	Site 22: 0 - 10	Site 22: 20 - 30	Site 22: 50 - 60	Site 22: 90 - 100
			Client sampling date / time	20-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-046	EB1627912-047	EB1627912-048	EB1627912-049	EB1627912-050
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	578	697	553	668	562
Nickel	7440-02-0	2	mg/kg	26	46	52	55	54
Selenium	7782-49-2	5	mg/kg	6	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	6	38	31	34	38
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	132	78	78	79	78
Zinc	7440-66-6	5	mg/kg	63	85	83	84	83
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.2	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1090	1400	910	670	700
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1090	1400	910	670	700
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	402	424	333	305	359
EP004: Organic Matter								
Organic Matter	----	0.5	%	2.7	2.5	1.0	1.2	0.9
Total Organic Carbon	----	0.5	%	1.5	1.4	0.6	0.7	0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 19: 50 - 60	Site 22: 0 - 10	Site 22: 20 - 30	Site 22: 50 - 60	Site 22: 90 - 100
			Client sampling date / time	20-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-046	EB1627912-047	EB1627912-048	EB1627912-049	EB1627912-050
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	85.7	88.1	81.8	104	85.3
Toluene-D8	2037-26-5	0.2	%	106	99.8	91.7	91.0	81.0
4-Bromofluorobenzene	460-00-4	0.2	%	124	111	96.4	110	96.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22A: 90 - 100	Site 23: 0 - 10	Site 23: 20 - 30	Site 23: 50 - 60	Site 23: 90 - 100
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-051	EB1627912-052	EB1627912-053	EB1627912-054	EB1627912-055
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	6.1	6.4	6.0	5.8	6.2
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	75	69	25	11	10
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	4.9	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	4.9	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	21	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	43	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	22	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.034	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	0.068	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	0.035	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	0.063	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.063	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	39	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.238	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	0.238	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.187	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.192	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22A: 90 - 100	Site 23: 0 - 10	Site 23: 20 - 30	Site 23: 50 - 60	Site 23: 90 - 100
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-051	EB1627912-052	EB1627912-053	EB1627912-054	EB1627912-055
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	0.10	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	60	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	4	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.10	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	60	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	4	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.2	6.3	6.3	6.0	6.1
ø pH (Fox)	----	0.1	pH Unit	3.3	3.9	4.7	5.0	5.2
ø Reaction Rate	----	1	-	3	4	3	4	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	41.0	37.0	34.2	27.6	25.7
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Brown	Very Dark Brown	Dark Brown	Dark Yellowish Brown	Dark Borwn
Texture	----	-	-	Silty Clay	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam
Emerson Class Number	EC/TC	-	-	4	4	4	4	4
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	42	27	22	17	14
Silt (2-20 µm)	----	1	%	36	11	20	9	5
Fine Sand (0.02-0.2 mm)	----	1	%	18	35	43	25	22
Coarse Sand (0.2-2.0 mm)	----	1	%	4	27	15	49	59
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.42	2.48	2.69	2.57	2.72
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	0.8	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22A: 90 - 100	Site 23: 0 - 10	Site 23: 20 - 30	Site 23: 50 - 60	Site 23: 90 - 100
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-051	EB1627912-052	EB1627912-053	EB1627912-054	EB1627912-055
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	0.3	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	10.1	8.9	2.6	2.6	3.8
Exchangeable Magnesium	----	0.1	meq/100g	13.4	2.0	1.5	4.7	5.4
Exchangeable Potassium	----	0.1	meq/100g	0.8	0.2	<0.1	<0.1	<0.1
Exchangeable Sodium	----	0.1	meq/100g	1.4	<0.1	<0.1	0.2	0.3
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	8.3	----
Cation Exchange Capacity	----	0.1	meq/100g	25.7	11.2	4.2	----	9.6
Exchangeable Sodium Percent	----	0.1	%	5.6	0.6	2.3	2.4	3.0
Calcium/Magnesium Ratio	----	0.1	-	0.8	4.4	1.7	0.6	0.7
Magnesium/Potassium Ratio	----	0.1	-	17.5	9.8	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	30	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	26200	41300	46300	38600	22600
Arsenic	7440-38-2	5	mg/kg	7	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	50	110	60	140	60
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	1	<1	<1
Chromium	7440-47-3	2	mg/kg	56	105	118	78	87
Cobalt	7440-48-4	2	mg/kg	23	24	25	25	22
Copper	7440-50-8	5	mg/kg	37	14	16	14	13
Iron	7439-89-6	50	mg/kg	50400	70200	79800	60500	53200
Lead	7439-92-1	5	mg/kg	11	8	8	8	7

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22A: 90 - 100	Site 23: 0 - 10	Site 23: 20 - 30	Site 23: 50 - 60	Site 23: 90 - 100
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-051	EB1627912-052	EB1627912-053	EB1627912-054	EB1627912-055
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	413	1400	735	767	618
Nickel	7440-02-0	2	mg/kg	51	35	38	37	33
Selenium	7782-49-2	5	mg/kg	<5	9	10	<5	6
Silver	7440-22-4	2	mg/kg	----	----	----	----	----
Strontium	7440-24-6	2	mg/kg	35	18	<2	<2	6
Tin	7440-31-5	5	mg/kg	----	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	82	265	301	194	186
Zinc	7440-66-6	5	mg/kg	87	95	87	77	72
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	1.2	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1630	2240	1190	430	90
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1630	2240	1190	430	90
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	544	811	546	652	372
EP004: Organic Matter								
Organic Matter	----	0.5	%	1.5	2.8	1.7	<0.5	<0.5
Total Organic Carbon	----	0.5	%	0.9	1.6	1.0	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22A: 90 - 100	Site 23: 0 - 10	Site 23: 20 - 30	Site 23: 50 - 60	Site 23: 90 - 100
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-051	EB1627912-052	EB1627912-053	EB1627912-054	EB1627912-055
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	104	77.9	83.2	92.7	102
Toluene-D8	2037-26-5	0.2	%	90.3	106	99.6	93.8	100
4-Bromofluorobenzene	460-00-4	0.2	%	110	115	106	112	114

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 0 - 10	Site 27: 20 - 30	Site 27: 50 - 60	Site 27: 90 - 100	Site 1: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-056	EB1627912-057	EB1627912-058	EB1627912-059	EB1627912-060
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	5.5	5.6	6.0	6.5	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	34	27	24	15	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 0 - 10	Site 27: 20 - 30	Site 27: 50 - 60	Site 27: 90 - 100	Site 1: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-056	EB1627912-057	EB1627912-058	EB1627912-059	EB1627912-060
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.8	5.9	5.7	6.5	----
ø pH (Fox)	----	0.1	pH Unit	3.6	4.2	4.1	4.6	----
ø Reaction Rate	----	1	-	4	3	3	2	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	24.3	23.8	28.8	28.1	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown	Dark Yellowish Brown	----
Texture	----	-	-	Sandy Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	----
Emerson Class Number	EC/TC	-	-	4	4	4	4	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	30	30	29	25	----
Silt (2-20 µm)	----	1	%	11	10	8	8	----
Fine Sand (0.02-0.2 mm)	----	1	%	29	25	26	25	----
Coarse Sand (0.2-2.0 mm)	----	1	%	30	35	37	42	----
Gravel (>2mm)	----	1	%	<1	<1	<1	<1	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.75	2.96	2.87	2.81	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	0.2	0.2	0.4	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 0 - 10	Site 27: 20 - 30	Site 27: 50 - 60	Site 27: 90 - 100	Site 1: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-056	EB1627912-057	EB1627912-058	EB1627912-059	EB1627912-060
				Result	Result	Result	Result	Result
ED005: Exchange Acidity - Continued								
Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	<0.1	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	4.4	5.0	5.3	6.5	----
Exchangeable Magnesium	----	0.1	meq/100g	2.8	2.5	3.1	4.1	----
Exchangeable Potassium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	----
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	<0.1	0.2	----
Cation Exchange Capacity	----	0.1	meq/100g	7.4	7.7	8.8	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	10.9	----
Exchangeable Sodium Percent	----	0.1	%	1.1	1.1	1.0	1.6	----
Calcium/Magnesium Ratio	----	0.1	-	1.6	2.0	1.7	1.6	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	<10	<10	<10	<10	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	20100	19700	18000	18700	36400
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	12
Barium	7440-39-3	10	mg/kg	40	40	30	30	40
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	1	1	1	<1	<1
Chromium	7440-47-3	2	mg/kg	117	122	109	93	88
Cobalt	7440-48-4	2	mg/kg	26	27	24	14	35
Copper	7440-50-8	5	mg/kg	7	7	7	9	47
Iron	7439-89-6	50	mg/kg	99600	101000	101000	56200	72400
Lead	7439-92-1	5	mg/kg	7	6	6	6	12

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 0 - 10	Site 27: 20 - 30	Site 27: 50 - 60	Site 27: 90 - 100	Site 1: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-056	EB1627912-057	EB1627912-058	EB1627912-059	EB1627912-060
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Manganese	7439-96-5	5	mg/kg	832	617	627	255	986
Nickel	7440-02-0	2	mg/kg	31	35	30	32	66
Selenium	7782-49-2	5	mg/kg	7	9	8	6	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	<2
Strontium	7440-24-6	2	mg/kg	<2	<2	<2	7	65
Tin	7440-31-5	5	mg/kg	----	----	----	----	<5
Vanadium	7440-62-2	5	mg/kg	372	376	344	253	129
Zinc	7440-66-6	5	mg/kg	111	109	105	88	101
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1190	650	970	350	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1190	650	970	350	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	392	297	358	310	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	2.2	1.2	1.7	1.4	----
Total Organic Carbon	----	0.5	%	1.2	0.7	1.0	0.8	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 0 - 10	Site 27: 20 - 30	Site 27: 50 - 60	Site 27: 90 - 100	Site 1: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-056	EB1627912-057	EB1627912-058	EB1627912-059	EB1627912-060
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
GEO26: Sieving								
-63µm	----	0.01	%	----	----	----	----	25.3
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	83.1	92.7	95.3	91.4	----
Toluene-D8	2037-26-5	0.2	%	70.1	90.6	118	100	----
4-Bromofluorobenzene	460-00-4	0.2	%	77.4	116	118	109	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 20 - 30 <63µm	Site 3: 0 - 10 <63µm	Site 3: 20 - 30 <63µm	Site 3: 50 - 60 <63µm	Site 3: 90 - 100 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-061	EB1627912-062	EB1627912-063	EB1627912-064	EB1627912-065
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 20 - 30 <63µm	Site 3: 0 - 10 <63µm	Site 3: 20 - 30 <63µm	Site 3: 50 - 60 <63µm	Site 3: 90 - 100 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-061	EB1627912-062	EB1627912-063	EB1627912-064	EB1627912-065
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 20 - 30 <63µm	Site 3: 0 - 10 <63µm	Site 3: 20 - 30 <63µm	Site 3: 50 - 60 <63µm	Site 3: 90 - 100 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-061	EB1627912-062	EB1627912-063	EB1627912-064	EB1627912-065
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**36200**	**23000**	**27000**	**38100**	**35900**
Arsenic	7440-38-2	5	mg/kg	**15**	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	**80**	**100**	**70**	**130**	**130**
Beryllium	7440-41-7	1	mg/kg	**1**	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**87**	**38**	**43**	**65**	**67**
Cobalt	7440-48-4	2	mg/kg	**35**	**22**	**22**	**16**	**17**
Copper	7440-50-8	5	mg/kg	**51**	**25**	**26**	**47**	**52**
Iron	7439-89-6	50	mg/kg	**102000**	**30400**	**36200**	**54800**	**49400**
Lead	7439-92-1	5	mg/kg	**13**	**7**	**6**	**8**	**8**
Manganese	7439-96-5	5	mg/kg	**4560**	**886**	**733**	**290**	**203**
Nickel	7440-02-0	2	mg/kg	**76**	**23**	**26**	**42**	**48**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 20 - 30 <63µm	Site 3: 0 - 10 <63µm	Site 3: 20 - 30 <63µm	Site 3: 50 - 60 <63µm	Site 3: 90 - 100 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-061	EB1627912-062	EB1627912-063	EB1627912-064	EB1627912-065
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	**93**	**33**	**17**	**21**	**25**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**154**	**74**	**78**	**100**	**102**
Zinc	7440-66-6	5	mg/kg	**96**	**74**	**70**	**81**	**79**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 1: 20 - 30 <63µm	Site 3: 0 - 10 <63µm	Site 3: 20 - 30 <63µm	Site 3: 50 - 60 <63µm	Site 3: 90 - 100 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-061	EB1627912-062	EB1627912-063	EB1627912-064	EB1627912-065
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**26.6**	**36.7**	**40.5**	**34.3**	**23.5**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 5: 0 - 10 <63µm	Site 5: 20 - 30 <63µm	Site 5: 50 - 60 <63µm	Site 5: 90 - 100 <63µm	Site 6: 0 - 10 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-066	EB1627912-067	EB1627912-068	EB1627912-069	EB1627912-070
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 5: 0 - 10 <63µm	Site 5: 20 - 30 <63µm	Site 5: 50 - 60 <63µm	Site 5: 90 - 100 <63µm	Site 6: 0 - 10 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-066	EB1627912-067	EB1627912-068	EB1627912-069	EB1627912-070
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 5: 0 - 10 <63µm	Site 5: 20 - 30 <63µm	Site 5: 50 - 60 <63µm	Site 5: 90 - 100 <63µm	Site 6: 0 - 10 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-066	EB1627912-067	EB1627912-068	EB1627912-069	EB1627912-070
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**31700**	**31600**	**32400**	**32500**	**24800**
Arsenic	7440-38-2	5	mg/kg	**10**	**11**	**12**	**12**	**5**
Barium	7440-39-3	10	mg/kg	**30**	**30**	**40**	**40**	**140**
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**45**	**45**	**45**	**46**	**50**
Cobalt	7440-48-4	2	mg/kg	**19**	**19**	**20**	**20**	**20**
Copper	7440-50-8	5	mg/kg	**33**	**35**	**38**	**46**	**48**
Iron	7439-89-6	50	mg/kg	**49400**	**52300**	**49600**	**57900**	**42900**
Lead	7439-92-1	5	mg/kg	**11**	**12**	**12**	**13**	**9**
Manganese	7439-96-5	5	mg/kg	**533**	**582**	**613**	**696**	**850**
Nickel	7440-02-0	2	mg/kg	**42**	**43**	**42**	**47**	**41**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 5: 0 - 10 <63µm	Site 5: 20 - 30 <63µm	Site 5: 50 - 60 <63µm	Site 5: 90 - 100 <63µm	Site 6: 0 - 10 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-066	EB1627912-067	EB1627912-068	EB1627912-069	EB1627912-070
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	**18**	**17**	**22**	**20**	**82**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**70**	**70**	**74**	**74**	**78**
Zinc	7440-66-6	5	mg/kg	**86**	**88**	**88**	**94**	**89**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 5: 0 - 10 <63µm	Site 5: 20 - 30 <63µm	Site 5: 50 - 60 <63µm	Site 5: 90 - 100 <63µm	Site 6: 0 - 10 <63µm
			Client sampling date / time	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	15-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-066	EB1627912-067	EB1627912-068	EB1627912-069	EB1627912-070
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**57.2**	**48.2**	**42.1**	**23.1**	**43.8**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 20 - 30 <63µm	Site 6: 50 - 60 <63µm	Site 6: 90 - 100 <63µm	Site 7: 0 - 10 <63µm	Site 7: 20 - 30 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-071	EB1627912-072	EB1627912-073	EB1627912-074	EB1627912-075
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 20 - 30 <63µm	Site 6: 50 - 60 <63µm	Site 6: 90 - 100 <63µm	Site 7: 0 - 10 <63µm	Site 7: 20 - 30 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-071	EB1627912-072	EB1627912-073	EB1627912-074	EB1627912-075
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 20 - 30 <63µm	Site 6: 50 - 60 <63µm	Site 6: 90 - 100 <63µm	Site 7: 0 - 10 <63µm	Site 7: 20 - 30 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-071	EB1627912-072	EB1627912-073	EB1627912-074	EB1627912-075
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	24300	26900	28700	16400	18500
Arsenic	7440-38-2	5	mg/kg	<5	5	6	<5	<5
Barium	7440-39-3	10	mg/kg	110	80	70	40	30
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	49	54	61	30	33
Cobalt	7440-48-4	2	mg/kg	17	16	16	5	4
Copper	7440-50-8	5	mg/kg	31	41	38	31	34
Iron	7439-89-6	50	mg/kg	42800	48200	54900	27600	29300
Lead	7439-92-1	5	mg/kg	7	8	8	8	8
Manganese	7439-96-5	5	mg/kg	476	282	224	72	42
Nickel	7440-02-0	2	mg/kg	39	40	41	9	9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 20 - 30 <63µm	Site 6: 50 - 60 <63µm	Site 6: 90 - 100 <63µm	Site 7: 0 - 10 <63µm	Site 7: 20 - 30 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-071	EB1627912-072	EB1627912-073	EB1627912-074	EB1627912-075
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	**55**	**48**	**45**	**39**	**39**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**76**	**78**	**90**	**41**	**43**
Zinc	7440-66-6	5	mg/kg	**75**	**87**	**79**	**31**	**30**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 6: 20 - 30 <63µm	Site 6: 50 - 60 <63µm	Site 6: 90 - 100 <63µm	Site 7: 0 - 10 <63µm	Site 7: 20 - 30 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-071	EB1627912-072	EB1627912-073	EB1627912-074	EB1627912-075
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**54.1**	**32.8**	**46.8**	**58.7**	**51.1**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 50 - 60 <63µm	Site 7: 90 - 100 <63µm	Site 8: 0 - 10 <63µm	Site 8: 20 - 30 <63µm	Site 8: 50 - 60 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-076	EB1627912-077	EB1627912-078	EB1627912-079	EB1627912-080
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 50 - 60 <63µm	Site 7: 90 - 100 <63µm	Site 8: 0 - 10 <63µm	Site 8: 20 - 30 <63µm	Site 8: 50 - 60 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-076	EB1627912-077	EB1627912-078	EB1627912-079	EB1627912-080
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 50 - 60 <63µm	Site 7: 90 - 100 <63µm	Site 8: 0 - 10 <63µm	Site 8: 20 - 30 <63µm	Site 8: 50 - 60 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-076	EB1627912-077	EB1627912-078	EB1627912-079	EB1627912-080
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	16900	19500	25400	25300	25300
Arsenic	7440-38-2	5	mg/kg	<5	<5	9	7	8
Barium	7440-39-3	10	mg/kg	30	40	40	40	40
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	31	34	59	60	58
Cobalt	7440-48-4	2	mg/kg	4	5	24	21	19
Copper	7440-50-8	5	mg/kg	26	29	45	44	43
Iron	7439-89-6	50	mg/kg	30100	27100	59800	60000	56100
Lead	7439-92-1	5	mg/kg	7	8	11	11	10
Manganese	7439-96-5	5	mg/kg	45	50	819	569	559
Nickel	7440-02-0	2	mg/kg	9	9	56	55	54

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 50 - 60 <63µm	Site 7: 90 - 100 <63µm	Site 8: 0 - 10 <63µm	Site 8: 20 - 30 <63µm	Site 8: 50 - 60 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-076	EB1627912-077	EB1627912-078	EB1627912-079	EB1627912-080
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	28	15	48	40	41
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	48	45	82	82	79
Zinc	7440-66-6	5	mg/kg	32	36	96	92	94
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 7: 50 - 60 <63µm	Site 7: 90 - 100 <63µm	Site 8: 0 - 10 <63µm	Site 8: 20 - 30 <63µm	Site 8: 50 - 60 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-076	EB1627912-077	EB1627912-078	EB1627912-079	EB1627912-080
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**49.9**	**72.5**	**41.9**	**37.1**	**58.3**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 90 - 100 <63µm	Site 9: 0 - 10 <63µm	Site 9: 20 - 30 <63µm	Site 9: 50 - 60 <63µm	Site 9: 90 - 100 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-081	EB1627912-082	EB1627912-083	EB1627912-084	EB1627912-085
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 90 - 100 <63µm	Site 9: 0 - 10 <63µm	Site 9: 20 - 30 <63µm	Site 9: 50 - 60 <63µm	Site 9: 90 - 100 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-081	EB1627912-082	EB1627912-083	EB1627912-084	EB1627912-085
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 90 - 100 <63µm	Site 9: 0 - 10 <63µm	Site 9: 20 - 30 <63µm	Site 9: 50 - 60 <63µm	Site 9: 90 - 100 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-081	EB1627912-082	EB1627912-083	EB1627912-084	EB1627912-085
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**26200**	**25600**	**26000**	**26200**	**25400**
Arsenic	7440-38-2	5	mg/kg	**7**	**8**	**7**	**10**	**5**
Barium	7440-39-3	10	mg/kg	**40**	**40**	**40**	**40**	**40**
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**62**	**49**	**49**	**49**	**48**
Cobalt	7440-48-4	2	mg/kg	**20**	**20**	**20**	**20**	**20**
Copper	7440-50-8	5	mg/kg	**43**	**43**	**42**	**41**	**35**
Iron	7439-89-6	50	mg/kg	**60700**	**54800**	**51200**	**56600**	**52300**
Lead	7439-92-1	5	mg/kg	**11**	**12**	**11**	**11**	**11**
Manganese	7439-96-5	5	mg/kg	**534**	**570**	**598**	**482**	**611**
Nickel	7440-02-0	2	mg/kg	**56**	**49**	**49**	**48**	**45**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 90 - 100 <63µm	Site 9: 0 - 10 <63µm	Site 9: 20 - 30 <63µm	Site 9: 50 - 60 <63µm	Site 9: 90 - 100 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-081	EB1627912-082	EB1627912-083	EB1627912-084	EB1627912-085
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	**40**	**34**	**34**	**31**	**25**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**85**	**72**	**71**	**74**	**75**
Zinc	7440-66-6	5	mg/kg	**96**	**94**	**96**	**93**	**90**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 8: 90 - 100 <63µm	Site 9: 0 - 10 <63µm	Site 9: 20 - 30 <63µm	Site 9: 50 - 60 <63µm	Site 9: 90 - 100 <63µm
			Client sampling date / time	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00	16-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-081	EB1627912-082	EB1627912-083	EB1627912-084	EB1627912-085
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**34.9**	**77.7**	**71.2**	**74.3**	**63.7**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 10: 0 - 10 <63µm	Site 10: 20 - 30 <63µm	Site 10: 50 - 60 <63µm	Site 10: 90 - 100 <63µm	Site 12: 0 - 10 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-086	EB1627912-087	EB1627912-088	EB1627912-089	EB1627912-090
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 10: 0 - 10 <63µm	Site 10: 20 - 30 <63µm	Site 10: 50 - 60 <63µm	Site 10: 90 - 100 <63µm	Site 12: 0 - 10 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-086	EB1627912-087	EB1627912-088	EB1627912-089	EB1627912-090
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 10: 0 - 10 <63µm	Site 10: 20 - 30 <63µm	Site 10: 50 - 60 <63µm	Site 10: 90 - 100 <63µm	Site 12: 0 - 10 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-086	EB1627912-087	EB1627912-088	EB1627912-089	EB1627912-090
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	50000	57800	60800	56600	30800
Arsenic	7440-38-2	5	mg/kg	<5	<5	6	8	7
Barium	7440-39-3	10	mg/kg	40	50	60	70	20
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	52	54	57	65	38
Cobalt	7440-48-4	2	mg/kg	6	6	5	5	8
Copper	7440-50-8	5	mg/kg	28	34	34	36	40
Iron	7439-89-6	50	mg/kg	80500	97100	101000	108000	58700
Lead	7439-92-1	5	mg/kg	13	16	19	24	11
Manganese	7439-96-5	5	mg/kg	125	160	215	251	98
Nickel	7440-02-0	2	mg/kg	16	15	15	16	27

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 10: 0 - 10 <63µm	Site 10: 20 - 30 <63µm	Site 10: 50 - 60 <63µm	Site 10: 90 - 100 <63µm	Site 12: 0 - 10 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-086	EB1627912-087	EB1627912-088	EB1627912-089	EB1627912-090
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	<2	<2	<2	<2	**7**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**209**	**242**	**241**	**238**	**84**
Zinc	7440-66-6	5	mg/kg	**42**	**42**	**39**	**40**	**67**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.2**	**0.2**	**0.1**	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 10: 0 - 10 <63µm	Site 10: 20 - 30 <63µm	Site 10: 50 - 60 <63µm	Site 10: 90 - 100 <63µm	Site 12: 0 - 10 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-086	EB1627912-087	EB1627912-088	EB1627912-089	EB1627912-090
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**37.7**	**35.9**	**50.8**	**40.3**	**58.1**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 20 - 30 <63µm	Site 12: 50 - 60 <63µm	Site 12: 90 - 100 <63µm	Site 14: 0 - 10 <63µm	Site 14: 20 - 30 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-091	EB1627912-092	EB1627912-093	EB1627912-094	EB1627912-095
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 20 - 30 <63µm	Site 12: 50 - 60 <63µm	Site 12: 90 - 100 <63µm	Site 14: 0 - 10 <63µm	Site 14: 20 - 30 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-091	EB1627912-092	EB1627912-093	EB1627912-094	EB1627912-095
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 20 - 30 <63µm	Site 12: 50 - 60 <63µm	Site 12: 90 - 100 <63µm	Site 14: 0 - 10 <63µm	Site 14: 20 - 30 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-091	EB1627912-092	EB1627912-093	EB1627912-094	EB1627912-095
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**33600**	**30000**	**28800**	**48100**	**46000**
Arsenic	7440-38-2	5	mg/kg	**7**	**8**	<5	**6**	**6**
Barium	7440-39-3	10	mg/kg	**20**	**20**	**30**	**80**	**100**
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**42**	**37**	**40**	**64**	**66**
Cobalt	7440-48-4	2	mg/kg	**9**	**12**	**10**	**16**	**17**
Copper	7440-50-8	5	mg/kg	**52**	**48**	**45**	**54**	**35**
Iron	7439-89-6	50	mg/kg	**67600**	**69600**	**36700**	**67100**	**71300**
Lead	7439-92-1	5	mg/kg	**13**	**13**	**14**	**12**	**12**
Manganese	7439-96-5	5	mg/kg	**134**	**253**	**104**	**289**	**214**
Nickel	7440-02-0	2	mg/kg	**32**	**31**	**36**	**37**	**38**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 20 - 30 <63µm	Site 12: 50 - 60 <63µm	Site 12: 90 - 100 <63µm	Site 14: 0 - 10 <63µm	Site 14: 20 - 30 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-091	EB1627912-092	EB1627912-093	EB1627912-094	EB1627912-095
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	**8**	**5**	**6**	**11**	**9**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**87**	**78**	**76**	**122**	**121**
Zinc	7440-66-6	5	mg/kg	**78**	**73**	**74**	**77**	**77**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	**0.2**	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 12: 20 - 30 <63µm	Site 12: 50 - 60 <63µm	Site 12: 90 - 100 <63µm	Site 14: 0 - 10 <63µm	Site 14: 20 - 30 <63µm
			Client sampling date / time	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00	17-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-091	EB1627912-092	EB1627912-093	EB1627912-094	EB1627912-095
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**38.6**	**51.9**	**55.1**	**29.7**	**46.2**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 50 - 60 <63µm	Site 15: 0 - 10 <63µm	Site 15: 20 - 30 <63µm	Site 15: 50 - 60 <63µm	Site 15: 90 - 100 <63µm
			Client sampling date / time	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-096	EB1627912-097	EB1627912-098	EB1627912-099	EB1627912-100
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 50 - 60 <63µm	Site 15: 0 - 10 <63µm	Site 15: 20 - 30 <63µm	Site 15: 50 - 60 <63µm	Site 15: 90 - 100 <63µm
			Client sampling date / time	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-096	EB1627912-097	EB1627912-098	EB1627912-099	EB1627912-100
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 50 - 60 <63µm	Site 15: 0 - 10 <63µm	Site 15: 20 - 30 <63µm	Site 15: 50 - 60 <63µm	Site 15: 90 - 100 <63µm
			Client sampling date / time	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-096	EB1627912-097	EB1627912-098	EB1627912-099	EB1627912-100
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	35800	40100	34300	28600	22200
Arsenic	7440-38-2	5	mg/kg	10	<5	9	9	9
Barium	7440-39-3	10	mg/kg	30	230	220	150	130
Beryllium	7440-41-7	1	mg/kg	<1	<1	1	1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	51	55	45	43	39
Cobalt	7440-48-4	2	mg/kg	22	23	36	36	32
Copper	7440-50-8	5	mg/kg	39	36	48	51	45
Iron	7439-89-6	50	mg/kg	74900	64200	73800	83000	54100
Lead	7439-92-1	5	mg/kg	11	13	21	20	18
Manganese	7439-96-5	5	mg/kg	529	877	1580	1460	1050
Nickel	7440-02-0	2	mg/kg	46	42	40	40	34

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 50 - 60 <63µm	Site 15: 0 - 10 <63µm	Site 15: 20 - 30 <63µm	Site 15: 50 - 60 <63µm	Site 15: 90 - 100 <63µm
			Client sampling date / time	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-096	EB1627912-097	EB1627912-098	EB1627912-099	EB1627912-100
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	**4**	**41**	**48**	**46**	**54**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**77**	**129**	**137**	**121**	**109**
Zinc	7440-66-6	5	mg/kg	**90**	**89**	**88**	**91**	**90**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 14: 50 - 60 <63µm	Site 15: 0 - 10 <63µm	Site 15: 20 - 30 <63µm	Site 15: 50 - 60 <63µm	Site 15: 90 - 100 <63µm
			Client sampling date / time	17-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00	18-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-096	EB1627912-097	EB1627912-098	EB1627912-099	EB1627912-100
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**44.9**	**43.1**	**18.8**	**19.8**	**20.8**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 130 - 140 <63µm	Site 15: 160 - 170 <63µm	Site 17: 0 - 10 <63µm	Site 18: 0 - 10 <63µm	Site 19: 50 - 60 <63µm
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00	20-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-101	EB1627912-102	EB1627912-103	EB1627912-104	EB1627912-105
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 130 - 140 <63µm	Site 15: 160 - 170 <63µm	Site 17: 0 - 10 <63µm	Site 18: 0 - 10 <63µm	Site 19: 50 - 60 <63µm
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00	20-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-101	EB1627912-102	EB1627912-103	EB1627912-104	EB1627912-105
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 130 - 140 <63µm	Site 15: 160 - 170 <63µm	Site 17: 0 - 10 <63µm	Site 18: 0 - 10 <63µm	Site 19: 50 - 60 <63µm
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00	20-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-101	EB1627912-102	EB1627912-103	EB1627912-104	EB1627912-105
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**19900**	**22000**	**23500**	**25300**	**25300**
Arsenic	7440-38-2	5	mg/kg	**8**	**5**	**5**	**8**	**7**
Barium	7440-39-3	10	mg/kg	**80**	**60**	**30**	**20**	**30**
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**43**	**37**	**80**	**58**	**84**
Cobalt	7440-48-4	2	mg/kg	**24**	**14**	**35**	**21**	**26**
Copper	7440-50-8	5	mg/kg	**40**	**30**	**54**	**53**	**41**
Iron	7439-89-6	50	mg/kg	**52000**	**46000**	**84300**	**58200**	**73900**
Lead	7439-92-1	5	mg/kg	**13**	**7**	**14**	**12**	**12**
Manganese	7439-96-5	5	mg/kg	**704**	**742**	**1200**	**587**	**1200**
Nickel	7440-02-0	2	mg/kg	**34**	**22**	**48**	**45**	**49**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 130 - 140 <63µm	Site 15: 160 - 170 <63µm	Site 17: 0 - 10 <63µm	Site 18: 0 - 10 <63µm	Site 19: 50 - 60 <63µm
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00	20-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-101	EB1627912-102	EB1627912-103	EB1627912-104	EB1627912-105
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	10	<5	7
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	65	50	14	60	22
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	94	86	246	101	216
Zinc	7440-66-6	5	mg/kg	84	71	189	109	120
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 15: 130 - 140 <63µm	Site 15: 160 - 170 <63µm	Site 17: 0 - 10 <63µm	Site 18: 0 - 10 <63µm	Site 19: 50 - 60 <63µm
			Client sampling date / time	18-Nov-2016 00:00	18-Nov-2016 00:00	19-Nov-2016 00:00	18-Nov-2016 00:00	20-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-101	EB1627912-102	EB1627912-103	EB1627912-104	EB1627912-105
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**36.2**	**69.3**	**11.0**	**31.2**	**26.4**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22: 0 - 10 <63µm	Site 22: 20 - 30 <63µm	Site 22: 50 - 60 <63µm	Site 22: 90 - 100 <63µm	Site 22A: 90 - 100 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-106	EB1627912-107	EB1627912-108	EB1627912-109	EB1627912-110
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22: 0 - 10 <63µm	Site 22: 20 - 30 <63µm	Site 22: 50 - 60 <63µm	Site 22: 90 - 100 <63µm	Site 22A: 90 - 100 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-106	EB1627912-107	EB1627912-108	EB1627912-109	EB1627912-110
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22: 0 - 10 <63µm	Site 22: 20 - 30 <63µm	Site 22: 50 - 60 <63µm	Site 22: 90 - 100 <63µm	Site 22A: 90 - 100 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-106	EB1627912-107	EB1627912-108	EB1627912-109	EB1627912-110
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**22000**	**23400**	**22400**	**22200**	**22600**
Arsenic	7440-38-2	5	mg/kg	**6**	**6**	**7**	**6**	**5**
Barium	7440-39-3	10	mg/kg	**50**	**40**	**50**	**50**	**50**
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**47**	**49**	**49**	**49**	**50**
Cobalt	7440-48-4	2	mg/kg	**17**	**18**	**17**	**17**	**21**
Copper	7440-50-8	5	mg/kg	**35**	**44**	**43**	**43**	**42**
Iron	7439-89-6	50	mg/kg	**44600**	**46600**	**47300**	**46200**	**45200**
Lead	7439-92-1	5	mg/kg	**8**	**9**	**9**	**9**	**10**
Manganese	7439-96-5	5	mg/kg	**500**	**404**	**428**	**414**	**332**
Nickel	7440-02-0	2	mg/kg	**40**	**46**	**49**	**48**	**48**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22: 0 - 10 <63µm	Site 22: 20 - 30 <63µm	Site 22: 50 - 60 <63µm	Site 22: 90 - 100 <63µm	Site 22A: 90 - 100 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-106	EB1627912-107	EB1627912-108	EB1627912-109	EB1627912-110
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	**34**	**29**	**32**	**34**	**32**
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**68**	**69**	**68**	**66**	**72**
Zinc	7440-66-6	5	mg/kg	**83**	**80**	**84**	**82**	**90**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 22: 0 - 10 <63µm	Site 22: 20 - 30 <63µm	Site 22: 50 - 60 <63µm	Site 22: 90 - 100 <63µm	Site 22A: 90 - 100 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-106	EB1627912-107	EB1627912-108	EB1627912-109	EB1627912-110
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**65.5**	**77.4**	**76.1**	**78.3**	**77.9**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 23: 0 - 10 <63µm	Site 23: 20 - 30 <63µm	Site 23: 50 - 60 <63µm	Site 23: 90 - 100 <63µm	Site 27: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-111	EB1627912-112	EB1627912-113	EB1627912-114	EB1627912-115
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 23: 0 - 10 <63µm	Site 23: 20 - 30 <63µm	Site 23: 50 - 60 <63µm	Site 23: 90 - 100 <63µm	Site 27: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-111	EB1627912-112	EB1627912-113	EB1627912-114	EB1627912-115
				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 23: 0 - 10 <63µm	Site 23: 20 - 30 <63µm	Site 23: 50 - 60 <63µm	Site 23: 90 - 100 <63µm	Site 27: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-111	EB1627912-112	EB1627912-113	EB1627912-114	EB1627912-115
				Result	Result	Result	Result	Result
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	63000	95500	43000	28500	30800
Arsenic	7440-38-2	5	mg/kg	<5	7	5	<5	<5
Barium	7440-39-3	10	mg/kg	190	110	260	140	70
Beryllium	7440-41-7	1	mg/kg	<1	<1	1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	1	1	<1	<1	2
Chromium	7440-47-3	2	mg/kg	129	163	106	159	186
Cobalt	7440-48-4	2	mg/kg	32	30	32	43	45
Copper	7440-50-8	5	mg/kg	38	36	25	39	25
Iron	7439-89-6	50	mg/kg	110000	160000	97500	97400	162000
Lead	7439-92-1	5	mg/kg	11	12	13	14	11
Manganese	7439-96-5	5	mg/kg	2500	1290	1210	1360	1420
Nickel	7440-02-0	2	mg/kg	32	34	29	31	46

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 23: 0 - 10 <63µm	Site 23: 20 - 30 <63µm	Site 23: 50 - 60 <63µm	Site 23: 90 - 100 <63µm	Site 27: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-111	EB1627912-112	EB1627912-113	EB1627912-114	EB1627912-115
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	11	16	10	14	14
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Strontium	7440-24-6	2	mg/kg	34	<2	12	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	385	510	321	357	616
Zinc	7440-66-6	5	mg/kg	123	107	87	110	176
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 23: 0 - 10 <63µm	Site 23: 20 - 30 <63µm	Site 23: 50 - 60 <63µm	Site 23: 90 - 100 <63µm	Site 27: 0 - 10 <63µm
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00
Compound	CAS Number	LOR	Unit	EB1627912-111	EB1627912-112	EB1627912-113	EB1627912-114	EB1627912-115
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**37.7**	**41.1**	**25.9**	**18.4**	**40.9**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 20 - 30 <63µm	Site 27: 50 - 60 <63µm	Site 27: 90 - 100 <63µm	----	----
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1627912-116	EB1627912-117	EB1627912-118	--------	--------
				Result	Result	Result	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	----	----	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	----	----	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	----	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	----	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	----	----	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	----	----	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	----	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	----	----	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	----	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	----	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	----	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	----	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 20 - 30 <63µm	Site 27: 50 - 60 <63µm	Site 27: 90 - 100 <63µm	----	----
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1627912-116	EB1627912-117	EB1627912-118	--------	--------
				Result	Result	Result	----	----
EA029-F: Excess Acid Neutralising Capacity - Continued								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	----	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	----	----	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	----	----	----
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
ø Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	----	----	----
Texture	----	-	-	----	----	----	----	----
Emerson Class Number	EC/TC	-	-	----	----	----	----	----
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Clay (<2 µm)	----	1	%	----	----	----	----	----
Silt (2-20 µm)	----	1	%	----	----	----	----	----
Fine Sand (0.02-0.2 mm)	----	1	%	----	----	----	----	----
Coarse Sand (0.2-2.0 mm)	----	1	%	----	----	----	----	----
Gravel (>2mm)	----	1	%	----	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	----
ED005: Exchange Acidity								
Exchange Acidity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 20 - 30 <63µm	Site 27: 50 - 60 <63µm	Site 27: 90 - 100 <63µm	----	----
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1627912-116	EB1627912-117	EB1627912-118	--------	--------
				Result	Result	Result	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	----	----	----
Calcium/Magnesium Ratio	----	0.1	-	----	----	----	----	----
Magnesium/Potassium Ratio	----	0.1	-	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**30200**	**29600**	**27700**	----	----
Arsenic	7440-38-2	5	mg/kg	**5**	<5	<5	----	----
Barium	7440-39-3	10	mg/kg	**70**	**60**	**60**	----	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	----	----
Boron	7440-42-8	50	mg/kg	<50	<50	<50	----	----
Cadmium	7440-43-9	1	mg/kg	**2**	**2**	**1**	----	----
Chromium	7440-47-3	2	mg/kg	**193**	**191**	**181**	----	----
Cobalt	7440-48-4	2	mg/kg	**48**	**43**	**31**	----	----
Copper	7440-50-8	5	mg/kg	**26**	**26**	**33**	----	----
Iron	7439-89-6	50	mg/kg	**182000**	**168000**	**134000**	----	----
Lead	7439-92-1	5	mg/kg	**11**	**11**	**11**	----	----
Manganese	7439-96-5	5	mg/kg	**1080**	**1040**	**465**	----	----
Nickel	7440-02-0	2	mg/kg	**49**	**49**	**53**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 20 - 30 <63µm	Site 27: 50 - 60 <63µm	Site 27: 90 - 100 <63µm	----	----
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1627912-116	EB1627912-117	EB1627912-118	--------	--------
				Result	Result	Result	----	----
EG005T: Total Metals by ICP-AES - Continued								
Selenium	7782-49-2	5	mg/kg	11	10	9	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Strontium	7440-24-6	2	mg/kg	<2	<2	15	----	----
Tin	7440-31-5	5	mg/kg	<5	<5	<5	----	----
Vanadium	7440-62-2	5	mg/kg	639	623	566	----	----
Zinc	7440-66-6	5	mg/kg	175	178	169	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	----
Total Organic Carbon	----	0.5	%	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Site 27: 20 - 30 <63µm	Site 27: 50 - 60 <63µm	Site 27: 90 - 100 <63µm	----	----
			Client sampling date / time	21-Nov-2016 00:00	21-Nov-2016 00:00	21-Nov-2016 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1627912-116	EB1627912-117	EB1627912-118	--------	--------
				Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
GEO26: Sieving								
-63µm	----	0.01	%	**39.0**	**36.6**	**32.3**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127

QUALITY CONTROL REPORT

Work Order	: **EB1627912**	Page	: 1 of 29
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR CLAYTON RICHARDS	Contact	: Customer Services EB
Address	: Level 2 15 ASTOR TERRACE SPRING HILL 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 02 4920 3000	Telephone	: +61-7-3243 7222
Project	: 620.11227.00300 TOTAL PNG	Date Samples Received	: 24-Nov-2016
Order number	: 620.11227.00300	Date Analysis Commenced	: 09-Dec-2016
C-O-C number	: ----	Issue Date	: 17-Jan-2017
Sampler	: CLAYTON RICHARDS		
Site	: ----		
Quote number	: EN/032/16		
No. of samples received	: 129		
No. of samples analysed	: 118		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Greg Vogel	Laboratory Manager	Brisbane Acid Sulphate Soils, Stafford, QLD
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA002 : pH (Soils) (QC Lot: 686315)									
EB1627912-001	Site 1: 0 - 10	EA002: pH Value	----	0.1	pH Unit	6.5	6.5	0.00	0% - 20%
EB1627912-011	Site 6: 0 - 10	EA002: pH Value	----	0.1	pH Unit	6.6	6.6	0.00	0% - 20%
EA002 : pH (Soils) (QC Lot: 686320)									
EB1627912-021	Site 8: 50 - 60	EA002: pH Value	----	0.1	pH Unit	5.8	5.9	0.00	0% - 20%
EB1627912-040	Site 15: 50 - 60	EA002: pH Value	----	0.1	pH Unit	6.3	6.2	1.59	0% - 20%
EA002 : pH (Soils) (QC Lot: 686347)									
EB1627912-041	Site 15: 90 - 100	EA002: pH Value	----	0.1	pH Unit	6.4	6.5	0.00	0% - 20%
EB1627912-051	Site 22A: 90 - 100	EA002: pH Value	----	0.1	pH Unit	6.1	6.2	0.00	0% - 20%
EA010: Conductivity (QC Lot: 686314)									
EB1627912-001	Site 1: 0 - 10	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	13	13	0.00	0% - 50%
EB1627912-011	Site 6: 0 - 10	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	140	137	2.16	0% - 20%
EA010: Conductivity (QC Lot: 686319)									
EB1627912-021	Site 8: 50 - 60	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	41	41	0.00	0% - 20%
EB1627912-040	Site 15: 50 - 60	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	11	10	0.00	0% - 50%
EA010: Conductivity (QC Lot: 686346)									
EB1627912-041	Site 15: 90 - 100	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	16	16	0.00	0% - 50%
EB1627912-051	Site 22A: 90 - 100	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	75	83	9.78	0% - 20%
EA029-A: pH Measurements (QC Lot: 714923)									
EB1627912-023	Site 9: 0 - 10	EA029: pH KCl (23A)	----	0.1	pH Unit	7.9	7.9	0.00	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	7.7	7.7	0.00	0% - 20%
EA029-B: Acidity Trail (QC Lot: 714923)									
EB1627912-023	Site 9: 0 - 10	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EA029-B: Acidity Trail (QC Lot: 714923) - continued									
EB1627912-023	Site 9: 0 - 10	EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EA029-C: Sulfur Trail (QC Lot: 714923)									
EB1627912-023	Site 9: 0 - 10	EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	<0.020	0.00	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.023	0.026	12.5	No Limit
		EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.023	0.026	12.5	No Limit
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	14	16	12.5	No Limit
EA029-D: Calcium Values (QC Lot: 714923)									
EB1627912-023	Site 9: 0 - 10	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.632	0.620	1.84	0% - 20%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	0.736	0.765	3.77	0% - 20%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	0.105	0.145	31.9	No Limit
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	0.084	0.116	31.9	No Limit
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	52	72	31.9	No Limit
EA029-E: Magnesium Values (QC Lot: 714923)									
EB1627912-023	Site 9: 0 - 10	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.077	0.076	0.00	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.104	0.114	8.62	No Limit
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.027	0.037	31.9	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.036	0.049	31.9	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	22	31	31.9	No Limit
EA029-F: Excess Acid Neutralising Capacity (QC Lot: 714923)									
EB1627912-023	Site 9: 0 - 10	EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	0.748	0.690	8.07	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	0.239	0.221	8.07	0% - 50%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	149	138	8.07	0% - 50%
EA029-H: Acid Base Accounting (QC Lot: 714923)									
EB1627912-023	Site 9: 0 - 10	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.03	0.00	No Limit
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.00	No Limit
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	14	16	12.5	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA037: Ass Field Screening Analysis (QC Lot: 686428)									
EB1627912-023	Site 9: 0 - 10	EA037: pH (F)	----	0.1	pH Unit	4.5	4.5	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.1	4.1	0.00	0% - 20%
EB1627912-048	Site 22: 20 - 30	EA037: pH (F)	----	0.1	pH Unit	5.8	6.0	2.03	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.9	4.0	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 686429)									
EB1627912-058	Site 27: 50 - 60	EA037: pH (F)	----	0.1	pH Unit	5.7	5.8	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.1	4.1	0.00	0% - 20%
EA055: Moisture Content (QC Lot: 686316)									
EB1627912-001	Site 1: 0 - 10	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	16.6	16.0	3.27	0% - 50%
EB1627912-011	Site 6: 0 - 10	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	32.7	31.4	3.83	0% - 20%
EA055: Moisture Content (QC Lot: 686327)									
EB1627912-021	Site 8: 50 - 60	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	31.7	32.6	2.78	0% - 20%
EB1627912-031	Site 12: 0 - 10	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	37.7	37.4	0.714	0% - 20%
EA055: Moisture Content (QC Lot: 686352)									
EB1627912-041	Site 15: 90 - 100	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	19.6	19.9	1.70	0% - 50%
EB1627912-051	Site 22A: 90 - 100	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	41.0	40.3	1.54	0% - 20%
ED005: Exchange Acidity (QC Lot: 713540)									
EB1627912-014	Site 6: 90 - 100	ED005: Exchange Acidity	----	0.1	meq/100g	5.8	5.8	0.00	0% - 20%
		ED005: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
EB1627912-003	Site 3: 0 - 10	ED005: Exchange Acidity	----	0.1	meq/100g	0.8	0.8	0.00	No Limit
		ED005: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
ED005: Exchange Acidity (QC Lot: 713543)									
EB1627912-054	Site 23: 50 - 60	ED005: Exchange Acidity	----	0.1	meq/100g	0.8	0.8	0.00	No Limit
		ED005: Exchangeable Aluminium	----	0.1	meq/100g	0.3	0.3	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	ED005: Exchange Acidity	----	0.1	meq/100g	16.8	16.9	0.00	0% - 20%
		ED005: Exchangeable Aluminium	----	0.1	meq/100g	14.7	14.8	0.00	0% - 20%
ED007: Exchangeable Cations (QC Lot: 713524)									
EB1627912-001	Site 1: 0 - 10	ED007: Exchangeable Calcium	----	0.1	meq/100g	22.2	22.8	2.59	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	11.9	12.2	2.41	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.3	0.3	0.00	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
EB1627912-025	Site 9: 50 - 60	ED007: Exchangeable Calcium	----	0.1	meq/100g	11.5	11.0	4.35	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	10.0	9.6	4.94	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.4	0.4	0.00	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.1	0.00	No Limit
ED007: Exchangeable Cations (QC Lot: 713525)									
EB1627912-052	Site 23: 0 - 10	ED007: Exchangeable Calcium	----	0.1	meq/100g	8.9	8.9	0.00	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	2.0	1.9	0.00	0% - 50%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED007: Exchangeable Cations (QC Lot: 713525) - continued									
EB1627912-052	Site 23: 0 - 10	ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
ED007: Exchangeable Cations (QC Lot: 713541)									
EB1627912-012	Site 6: 20 - 30	ED007: Exchangeable Calcium	----	0.1	meq/100g	12.6	12.4	2.04	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	11.3	11.0	3.38	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.5	0.5	0.00	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	0.2	0.2	0.00	No Limit
EB1627912-003	Site 3: 0 - 10	ED007: Exchangeable Calcium	----	0.1	meq/100g	5.7	5.6	1.88	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	3.2	3.1	0.00	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.00	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
ED007: Exchangeable Cations (QC Lot: 713544)									
EB1627912-047	Site 22: 0 - 10	ED007: Exchangeable Calcium	----	0.1	meq/100g	13.3	13.2	0.00	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	11.9	11.8	1.20	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	1.5	1.4	0.00	0% - 50%
		ED007: Exchangeable Sodium	----	0.1	meq/100g	0.2	0.2	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	ED007: Exchangeable Calcium	----	0.1	meq/100g	0.3	0.3	0.00	No Limit
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	0.8	0.7	0.00	No Limit
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.3	0.3	0.00	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
ED008: Exchangeable Cations (QC Lot: 713547)									
EB1627912-045	Site 18: 0 - 10	ED008: Exchangeable Calcium	----	0.1	meq/100g	4.3	4.3	0.00	0% - 20%
		ED008: Exchangeable Magnesium	----	0.1	meq/100g	8.5	8.7	2.75	0% - 20%
		ED008: Exchangeable Potassium	----	0.1	meq/100g	1.0	1.0	0.00	0% - 50%
		ED008: Exchangeable Sodium	----	0.1	meq/100g	1.8	1.8	0.00	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 686313)									
EB1627912-001	Site 1: 0 - 10	ED045G: Chloride	16887-00-6	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	ED045G: Chloride	16887-00-6	10	mg/kg	20	20	0.00	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 686317)									
EB1627912-021	Site 8: 50 - 60	ED045G: Chloride	16887-00-6	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-040	Site 15: 50 - 60	ED045G: Chloride	16887-00-6	10	mg/kg	<10	<10	0.00	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 686344)									
EB1627912-041	Site 15: 90 - 100	ED045G: Chloride	16887-00-6	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	ED045G: Chloride	16887-00-6	10	mg/kg	30	30	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 686306)									
EB1627912-001	Site 1: 0 - 10	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	30	30	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	72	72	0.00	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	27	27	0.00	0% - 50%

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 686306) - continued									
EB1627912-001	Site 1: 0 - 10	EG005T: Nickel	7440-02-0	2	mg/kg	56	56	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	60	59	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	29	29	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	746	746	0.00	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	98	98	0.00	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	83	82	0.00	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	29800	29400	1.19	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	55600	55400	0.490	0% - 20%
EB1627912-011	Site 6: 0 - 10	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	120	120	0.00	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	49	50	0.00	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	27	27	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	36	36	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	86	87	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	25	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	11	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	1030	1040	0.340	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	93	94	0.00	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	69	69	0.00	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	23500	23500	0.271	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	56800	57400	1.05	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 686323)									
EB1627912-021	Site 8: 50 - 60	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	40	40	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	54	54	0.00	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	24	24	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	58	58	0.00	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 686323) - continued									
EB1627912-021	Site 8: 50 - 60	EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	42	42	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	36	36	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	920	919	0.173	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	85	84	0.00	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	85	85	0.00	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	22500	22400	0.460	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	48900	48900	0.00	0% - 20%
EB1627912-031	Site 12: 0 - 10	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	20	20	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	41	41	0.00	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	7	8	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	30	30	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	16.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	34	34	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	11	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	116	116	0.00	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	100	100	0.00	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	62	63	0.00	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	37600	37700	0.438	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	70100	69900	0.331	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 686348)									
EB1627912-041	Site 15: 90 - 100	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	80	90	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	35	36	3.81	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	17	18	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	36	42	14.5	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 686348) - continued									
EB1627912-041	Site 15: 90 - 100	EG005T: Strontium	7440-24-6	2	mg/kg	47	50	5.38	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	24	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	524	556	5.77	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	84	90	6.75	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	63	65	2.99	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	20900	22200	6.41	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	38100	40000	4.81	0% - 20%
EB1627912-051	Site 22A: 90 - 100	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	50	50	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	56	60	6.27	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	23	26	10.2	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	51	58	12.8	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	35	35	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	43	13.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	10	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	413	376	9.48	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	82	85	3.86	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	87	91	4.36	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	26200	28100	6.90	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	50400	51500	2.25	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 719176)									
EB1627912-060	Site 1: 0 - 10 <63µm	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	40	40	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	88	89	0.00	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	35	35	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	66	67	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	65	65	0.00	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 719176) - continued									
EB1627912-060	Site 1: 0 - 10 <63µm	EG005T: Arsenic	7440-38-2	5	mg/kg	12	12	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	47	47	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	13	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	986	980	0.612	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	129	130	0.00	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	101	100	1.17	0% - 20%
		EG005T: Aluminium	7429-90-5	50	mg/kg	36400	37100	1.84	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	72400	72400	0.00	0% - 20%
EB1627912-070	Site 6: 0 - 10 <63µm	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	140	140	0.00	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	50	50	0.00	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	20	20	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	41	42	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	82	83	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	48	48	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	8	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	850	853	0.338	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	78	79	1.38	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	89	90	0.00	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	24800	25000	0.936	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	42900	43700	1.83	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 719178)									
EB1627912-080	Site 8: 50 - 60 <63µm	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	40	40	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	58	60	2.42	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	19	19	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	54	56	2.12	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	41	42	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	8	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 719178) - continued									
EB1627912-080	Site 8: 50 - 60 <63µm	EG005T: Copper	7440-50-8	5	mg/kg	43	44	2.94	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	11	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	559	573	2.40	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	79	81	2.34	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	94	96	1.49	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	25300	25800	2.12	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	56100	56100	0.146	0% - 20%
EB1627912-090	Site 12: 0 - 10 <63µm	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	20	20	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	38	37	0.00	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	8	8	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	27	26	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	7	7	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	40	40	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	11	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	98	93	4.74	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	84	82	2.06	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	67	66	2.02	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	30800	30200	1.95	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	58700	59500	1.37	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 719180)									
EB1627912-100	Site 15: 90 - 100 <63µm	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	130	130	0.00	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	39	40	0.00	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	32	32	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	34	34	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	54	54	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	9	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	45	45	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 719180) - continued									
EB1627912-100	Site 15: 90 - 100 <63µm	EG005T: Lead	7439-92-1	5	mg/kg	18	19	5.85	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	1050	1050	0.298	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	109	110	0.00	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	90	90	0.00	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	22200	22500	1.16	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	54100	54400	0.649	0% - 20%
EB1627912-110	Site 22A: 90 - 100 <63µm	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	50	50	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	50	52	3.69	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	21	22	4.75	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	48	50	4.22	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Strontium	7440-24-6	2	mg/kg	32	34	5.53	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	42	43	4.11	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	332	345	3.90	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	72	74	3.26	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	90	94	3.62	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	22600	23400	3.78	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	45200	47100	4.10	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 686307)									
EB1627912-001	Site 1: 0 - 10	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 686324)									
EB1627912-021	Site 8: 50 - 60	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 686349)									
EB1627912-041	Site 15: 90 - 100	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 719175)									
EB1627912-060	Site 1: 0 - 10 <63µm	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 719175) - continued									
EB1627912-070	Site 6: 0 - 10 <63µm	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 719177)									
EB1627912-080	Site 8: 50 - 60 <63µm	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1627912-090	Site 12: 0 - 10 <63µm	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 719179)									
EB1627912-100	Site 15: 90 - 100 <63µm	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1627912-110	Site 22A: 90 - 100 <63µm	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 686312)									
EB1627912-001	Site 1: 0 - 10	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.1	0.1	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	4.2	4.1	0.00	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 686318)									
EB1627912-021	Site 8: 50 - 60	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.1	0.1	0.00	No Limit
EB1627912-040	Site 15: 50 - 60	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 686345)									
EB1627912-041	Site 15: 90 - 100	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.2	0.2	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 686311)									
EB1627912-001	Site 1: 0 - 10	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	450	# 290	42.3	0% - 20%
EB1627912-011	Site 6: 0 - 10	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	3100	3530	13.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 686325)									
EB1627912-021	Site 8: 50 - 60	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	960	# 1210	23.4	0% - 20%
EB1627912-031	Site 12: 0 - 10	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	2060	1850	11.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 686350)									
EB1627912-041	Site 15: 90 - 100	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	260	240	10.2	0% - 50%
EB1627912-051	Site 22A: 90 - 100	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	1630	# 1200	30.0	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 686310)									
EB1627912-001	Site 1: 0 - 10	EK067G: Total Phosphorus as P	----	2	mg/kg	511	424	18.5	0% - 20%
EB1627912-011	Site 6: 0 - 10	EK067G: Total Phosphorus as P	----	2	mg/kg	308	326	5.94	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 686326)									
EB1627912-021	Site 8: 50 - 60	EK067G: Total Phosphorus as P	----	2	mg/kg	705	668	5.44	0% - 20%
EB1627912-031	Site 12: 0 - 10	EK067G: Total Phosphorus as P	----	2	mg/kg	440	# 348	23.4	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 686351)									
EB1627912-041	Site 15: 90 - 100	EK067G: Total Phosphorus as P	----	2	mg/kg	581	581	0.00	0% - 20%
EB1627912-051	Site 22A: 90 - 100	EK067G: Total Phosphorus as P	----	2	mg/kg	544	482	12.0	0% - 20%
EP004: Organic Matter (QC Lot: 687481)									
EB1627912-001	Site 1: 0 - 10	EP004: Organic Matter	----	0.5	%	<0.5	<0.5	0.00	No Limit
		EP004: Total Organic Carbon	----	0.5	%	<0.5	<0.5	0.00	No Limit
EB1627912-010	Site 5: 90 - 100	EP004: Organic Matter	----	0.5	%	1.4	1.7	23.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP004: Organic Matter (QC Lot: 687481) - continued									
EB1627912-010	Site 5: 90 - 100	EP004: Total Organic Carbon	----	0.5	%	0.8	1.0	22.7	No Limit
EP004: Organic Matter (QC Lot: 687483)									
EB1627912-021	Site 8: 50 - 60	EP004: Organic Matter	----	0.5	%	2.5	2.6	4.63	No Limit
		EP004: Total Organic Carbon	----	0.5	%	1.5	1.5	0.00	No Limit
EB1627912-030	Site 10: 90 - 100	EP004: Organic Matter	----	0.5	%	0.9	0.7	20.2	No Limit
		EP004: Total Organic Carbon	----	0.5	%	0.5	<0.5	0.00	No Limit
EP004: Organic Matter (QC Lot: 687484)									
EB1627912-041	Site 15: 90 - 100	EP004: Organic Matter	----	0.5	%	0.5	0.5	0.00	No Limit
		EP004: Total Organic Carbon	----	0.5	%	<0.5	<0.5	0.00	No Limit
EB1627912-050	Site 22: 90 - 100	EP004: Organic Matter	----	0.5	%	0.9	0.7	20.2	No Limit
		EP004: Total Organic Carbon	----	0.5	%	0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 686308)									
EB1627912-001	Site 1: 0 - 10	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 686309)									
EB1627912-001	Site 1: 0 - 10	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 686321)									
EB1627912-021	Site 8: 50 - 60	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 686322)									
EB1627912-021	Site 8: 50 - 60	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 686342)									
EB1627912-041	Site 15: 90 - 100	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 686343)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 686343) - continued									
EB1627912-041	Site 15: 90 - 100	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 686308)									
EB1627912-001	Site 1: 0 - 10	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 686309)									
EB1627912-001	Site 1: 0 - 10	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 686321)									
EB1627912-021	Site 8: 50 - 60	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 686322)									
EB1627912-021	Site 8: 50 - 60	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 686342)									
EB1627912-041	Site 15: 90 - 100	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 686343)									
EB1627912-041	Site 15: 90 - 100	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 686308)									
EB1627912-001	Site 1: 0 - 10	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 686308) - continued									
EB1627912-001	Site 1: 0 - 10	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EB1627912-011	Site 6: 0 - 10	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 686322)									
EB1627912-021	Site 8: 50 - 60	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EB1627912-031	Site 12: 0 - 10	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 686343)									
EB1627912-041	Site 15: 90 - 100	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EB1627912-051	Site 22A: 90 - 100	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA002 : pH (Soils) (QCLot: 686315)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	100	98	102
				----	7 pH Unit	99.8	98	102
EA002 : pH (Soils) (QCLot: 686320)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98	102
				----	7 pH Unit	99.7	98	102
EA002 : pH (Soils) (QCLot: 686347)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98	102
				----	7 pH Unit	99.7	98	102
EA010: Conductivity (QCLot: 686314)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	99.8	97	103
EA010: Conductivity (QCLot: 686319)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	98.4	97	103
EA010: Conductivity (QCLot: 686346)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	99.3	97	103
EA029-A: pH Measurements (QCLot: 714923)								
EA029: pH KCl (23A)	----	0.1	pH Unit	<0.1	4.6 pH Unit	95.6	70	130
EA029: pH OX (23B)	----	0.1	pH Unit	<0.1	4.1 pH Unit	102	70	130
EA029-B: Acidity Trail (QCLot: 714923)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	34 mole H+ / t	87.7	70	130
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	66 mole H+ / t	102	70	130
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 714923)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	0.052 % S	86.1	70	130
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	0.158 % S	103	70	130
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 714923)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.020	0.097 % Ca	100	70	130
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.020	0.22 % Ca	108	70	130
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EA029-D: Calcium Values (QCLot: 714923) - continued								
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values (QCLot: 714923)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	0.25 % Mg	83.8	70	130
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.020	0.234 % Mg	95.1	70	130
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 714923)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.020	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.020	----	----	----	----
EA029-H: Acid Base Accounting (QCLot: 714923)								
EA029: ANC Fineness Factor	----	0.5	-	<0.5	----	----	----	----
EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	----	----
ED005: Exchange Acidity (QCLot: 713540)								
ED005: Exchange Acidity	----	0.1	meq/100g	<0.1	----	----	----	----
ED005: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	----	----	----	----
ED005: Exchange Acidity (QCLot: 713543)								
ED005: Exchange Acidity	----	0.1	meq/100g	<0.1	----	----	----	----
ED005: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	----	----	----	----
ED007: Exchangeable Cations (QCLot: 713524)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	15.5 meq/100g	106	79	113
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	9.87 meq/100g	107	85	115
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.561 meq/100g	112	70	122
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	11.2 meq/100g	99.6	76	112
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	37.131 meq/100g	104	82	112
ED007: Exchangeable Cations (QCLot: 713525)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	15.5 meq/100g	105	79	113
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	9.87 meq/100g	105	85	115
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.561 meq/100g	109	70	122
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	11.2 meq/100g	99.4	76	112

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
ED007: Exchangeable Cations (QCLot: 713525) - continued								
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	37.131 meq/100g	104	82	112
ED007: Exchangeable Cations (QCLot: 713541)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	15.5 meq/100g	113	79	113
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	9.87 meq/100g	114	85	115
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.561 meq/100g	112	70	122
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	11.2 meq/100g	109	76	112
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	37.131 meq/100g	112	82	112
ED007: Exchangeable Cations (QCLot: 713544)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	15.5 meq/100g	113	79	113
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	9.87 meq/100g	114	85	115
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.561 meq/100g	110	70	122
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	11.2 meq/100g	110	76	112
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	37.131 meq/100g	112	82	112
ED008: Exchangeable Cations (QCLot: 713547)								
ED008: Exchangeable Calcium	----	0.1	meq/100g	<0.1	10.925 meq/100g	103	91	109
ED008: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	5.9518 meq/100g	102	89	111
ED008: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.4769 meq/100g	92.1	79	116
ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.8718 meq/100g	75.0	75	118
ED008: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	18.2255 meq/100g	101	88	110
ED045G: Chloride by Discrete Analyser (QCLot: 686313)								
ED045G: Chloride	16887-00-6	10	mg/kg	<10	50 mg/kg	107	83	119
				<10	5000 mg/kg	106	83	119
ED045G: Chloride by Discrete Analyser (QCLot: 686317)								
ED045G: Chloride	16887-00-6	10	mg/kg	<10	50 mg/kg	106	83	119
				<10	5000 mg/kg	105	83	119
ED045G: Chloride by Discrete Analyser (QCLot: 686344)								
ED045G: Chloride	16887-00-6	10	mg/kg	<10	50 mg/kg	99.8	83	119
				<10	5000 mg/kg	107	83	119
EG005T: Total Metals by ICP-AES (QCLot: 686306)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	94.3	84	123
EG005T: Barium	7440-39-3	10	mg/kg	<10	105.1967 mg/kg	94.2	89	129
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.59196 mg/kg	120	94	128
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	109	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	94.7	83	125
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.5 mg/kg	106	89	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	104	86	122

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 686306) - continued								
EG005T: Iron	7439-89-6	50	mg/kg	<50	34900 mg/kg	110	70	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	101	84	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	604.6 mg/kg	102	84	113
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	95.7	89	126
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	# 4	3.1 mg/kg	# 140	84	122
EG005T: Strontium	7440-24-6	2	mg/kg	<2	68.55697 mg/kg	86.4	83	117
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.7 mg/kg	95.2	75	130
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	69.8 mg/kg	99.5	91	127
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	108	87	127
EG005T: Total Metals by ICP-AES (QCLot: 686323)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	99.6	84	123
EG005T: Barium	7440-39-3	10	mg/kg	<10	105.1967 mg/kg	101	89	129
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.59196 mg/kg	117	94	128
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	103	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	102	83	125
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.5 mg/kg	102	89	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	103	86	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	34900 mg/kg	97.5	70	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	95.3	84	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	604.6 mg/kg	96.5	84	113
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	125	89	126
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	# 7	3.1 mg/kg	# 162	84	122
EG005T: Strontium	7440-24-6	2	mg/kg	<2	68.55697 mg/kg	88.9	83	117
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.7 mg/kg	85.6	75	130
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	69.8 mg/kg	104	91	127
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	102	87	127
EG005T: Total Metals by ICP-AES (QCLot: 686348)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	95.1	84	123
EG005T: Barium	7440-39-3	10	mg/kg	<10	105.1967 mg/kg	91.4	89	129
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.59196 mg/kg	106	94	128
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	105	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	96.1	83	125
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.5 mg/kg	99.8	89	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 686348) - continued								
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	105	86	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	34900 mg/kg	101	70	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	102	84	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	604.6 mg/kg	100	84	113
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	98.8	89	126
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	3.1 mg/kg	114	84	122
EG005T: Strontium	7440-24-6	2	mg/kg	<2	68.55697 mg/kg	86.7	83	117
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.7 mg/kg	75.3	75	130
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	69.8 mg/kg	98.9	91	127
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	103	87	127
EG005T: Total Metals by ICP-AES (QCLot: 719176)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	106	84	123
EG005T: Barium	7440-39-3	10	mg/kg	<10	105.1967 mg/kg	97.2	89	129
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.59196 mg/kg	123	94	128
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	95.7	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	106	83	125
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.5 mg/kg	109	89	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	111	86	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	34900 mg/kg	113	70	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	105	84	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	604.6 mg/kg	106	84	113
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	108	89	126
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	3.1 mg/kg	119	84	122
EG005T: Strontium	7440-24-6	2	mg/kg	<2	68.55697 mg/kg	88.9	83	117
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.7 mg/kg	116	75	130
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	69.8 mg/kg	106	91	127
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	109	87	127
EG005T: Total Metals by ICP-AES (QCLot: 719178)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	96.3	84	123
EG005T: Barium	7440-39-3	10	mg/kg	<10	105.1967 mg/kg	93.0	89	129
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.59196 mg/kg	113	94	128
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	91.4	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	101	83	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 719178) - continued								
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.5 mg/kg	105	89	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	105	86	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	34900 mg/kg	108	70	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	103	84	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	604.6 mg/kg	101	84	113
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	98.5	89	126
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	3.1 mg/kg	88.3	84	122
EG005T: Strontium	7440-24-6	2	mg/kg	<2	68.55697 mg/kg	84.5	83	117
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.7 mg/kg	88.7	75	130
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	69.8 mg/kg	102	91	127
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	107	87	127
EG005T: Total Metals by ICP-AES (QCLot: 719180)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	93.8	84	123
EG005T: Barium	7440-39-3	10	mg/kg	<10	105.1967 mg/kg	89.9	89	129
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.59196 mg/kg	109	94	128
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	95.6	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	96.3	83	125
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.5 mg/kg	100	89	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	101	86	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	34900 mg/kg	97.2	70	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	98.7	84	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	604.6 mg/kg	97.6	84	113
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	95.8	89	126
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	3.1 mg/kg	94.2	84	122
EG005T: Strontium	7440-24-6	2	mg/kg	<2	68.55697 mg/kg	83.6	83	117
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.7 mg/kg	85.8	75	130
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	69.8 mg/kg	92.5	91	127
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	106	87	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 686307)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	95.7	78	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 686324)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	115	78	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 686349)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	114	78	122

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 719175)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	101	78	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 719177)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	105	78	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 719179)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	117	78	122
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 686312)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	94.5	86	115
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 686318)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	106	86	115
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 686345)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	104	86	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 686311)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20	877 mg/kg	93.0	70	110
				<20	3644 mg/kg	103	70	110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 686325)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20	877 mg/kg	101	70	110
				<20	3644 mg/kg	100	70	110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 686350)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20	877 mg/kg	94.4	70	110
				<20	3644 mg/kg	99.6	70	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 686310)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2	766 mg/kg	97.0	70	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 686326)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2	766 mg/kg	81.9	70	110
				<2	1200 mg/kg	104	70	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 686351)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2	766 mg/kg	93.8	70	110
				<2	1200 mg/kg	110	70	110
EP004: Organic Matter (QCLot: 687481)								
EP004: Organic Matter	----	0.5	%	<0.5	80 %	96.2	83	115
EP004: Total Organic Carbon	----	0.5	%	<0.5	46.4 %	96.2	85	115
EP004: Organic Matter (QCLot: 687483)								
EP004: Organic Matter	----	0.5	%	<0.5	80 %	96.2	83	115
EP004: Total Organic Carbon	----	0.5	%	<0.5	46.4 %	96.2	85	115
EP004: Organic Matter (QCLot: 687484)								
EP004: Organic Matter	----	0.5	%	<0.5	80 %	96.2	83	115
EP004: Total Organic Carbon	----	0.5	%	<0.5	46.4 %	96.2	85	115

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686308)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	96.0	66	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686309)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	90.4	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	93.7	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686321)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	107	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	108	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686322)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	102	66	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686342)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	105	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	107	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686343)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	80.5	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686308)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	93.6	66	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686309)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	83.9	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	93.2	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686321)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	97.7	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	106	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686322)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	98.4	66	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686342)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	96.0	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	106	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686343)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	78.1	66	119
EP080: BTEXN (QCLot: 686308)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	98.2	73	105

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 686308) - continued								
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.3	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	98.0	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.3	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.8	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.4	72	115
EP080: BTEXN (QCLot: 686322)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	88.1	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	# 117	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	# 118	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	# 110	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	# 116	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	86.1	72	115
EP080: BTEXN (QCLot: 686343)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	75.4	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	79.7	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.7	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	82.1	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.2	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	83.9	72	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 686306)							
EB1627912-002	Site 1: 20 - 30	EG005T: Arsenic	7440-38-2	50 mg/kg	94.0	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	124	70	130
		EG005T: Beryllium	7440-41-7	5 mg/kg	118	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Cobalt	7440-48-4	50 mg/kg	111	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	112	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	105	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG005T: Total Metals by ICP-AES (QCLot: 686306) - continued							
EB1627912-002	Site 1: 20 - 30	EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	104	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	98.6	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	106	70	130
EG005T: Total Metals by ICP-AES (QCLot: 686323)							
EB1627912-022	Site 8: 90 - 100	EG005T: Arsenic	7440-38-2	50 mg/kg	97.0	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	# 132	70	130
		EG005T: Beryllium	7440-41-7	5 mg/kg	116	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	107	70	130
		EG005T: Cobalt	7440-48-4	50 mg/kg	103	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	112	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	104	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	118	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	123	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG005T: Total Metals by ICP-AES (QCLot: 686348)							
EB1627912-042	Site 15: 130 - 140	EG005T: Arsenic	7440-38-2	50 mg/kg	99.9	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	118	70	130
		EG005T: Beryllium	7440-41-7	5 mg/kg	114	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	109	70	130
		EG005T: Cobalt	7440-48-4	50 mg/kg	105	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	111	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	105	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	102	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG005T: Total Metals by ICP-AES (QCLot: 719176)							
EB1627912-061	Site 1: 20 - 30 <63µm	EG005T: Arsenic	7440-38-2	50 mg/kg	78.1	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	79.9	70	130
		EG005T: Beryllium	7440-41-7	5 mg/kg	97.7	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	89.5	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 719176) - continued							
EB1627912-061	Site 1: 20 - 30 <63µm	EG005T: Cobalt	7440-48-4	50 mg/kg	83.2	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	80.8	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	90.3	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	70.6	70	130
EG005T: Total Metals by ICP-AES (QCLot: 719178)							
EB1627912-081	Site 8: 90 - 100 <63µm	EG005T: Arsenic	7440-38-2	50 mg/kg	100	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	119	70	130
		EG005T: Beryllium	7440-41-7	5 mg/kg	119	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	107	70	130
		EG005T: Cobalt	7440-48-4	50 mg/kg	109	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	108	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	107	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	102	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	96.7	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG005T: Total Metals by ICP-AES (QCLot: 719180)							
EB1627912-101	Site 15: 130 - 140 <63µm	EG005T: Arsenic	7440-38-2	50 mg/kg	95.0	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	118	70	130
		EG005T: Beryllium	7440-41-7	5 mg/kg	114	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	102	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Cobalt	7440-48-4	50 mg/kg	105	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	105	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	101	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.4	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	96.2	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	98.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 686307)							
EB1627912-002	Site 1: 20 - 30	EG035T: Mercury	7439-97-6	2.5 mg/kg	107	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 686324)							
EB1627912-022	Site 8: 90 - 100	EG035T: Mercury	7439-97-6	2.5 mg/kg	109	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 686349)							
EB1627912-042	Site 15: 130 - 140	EG035T: Mercury	7439-97-6	2.5 mg/kg	105	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 719175)							
EB1627912-061	Site 1: 20 - 30 <63µm	EG035T: Mercury	7439-97-6	2.5 mg/kg	93.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 719177)							
EB1627912-081	Site 8: 90 - 100 <63µm	EG035T: Mercury	7439-97-6	2.5 mg/kg	113	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 719179)							
EB1627912-101	Site 15: 130 - 140 <63µm	EG035T: Mercury	7439-97-6	2.5 mg/kg	109	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 686312)							
EB1627912-002	Site 1: 20 - 30	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	97.7	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 686318)							
EB1627912-022	Site 8: 90 - 100	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	100	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 686345)							
EB1627912-042	Site 15: 130 - 140	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	96.7	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 686311)							
EB1627912-002	Site 1: 20 - 30	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	88.8	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 686325)							
EB1627912-022	Site 8: 90 - 100	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	71.2	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 686350)							
EB1627912-042	Site 15: 130 - 140	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	92.7	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 686310)							
EB1627912-002	Site 1: 20 - 30	EK067G: Total Phosphorus as P	----	100 mg/kg	# Not Determined	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 686326)							
EB1627912-022	Site 8: 90 - 100	EK067G: Total Phosphorus as P	----	100 mg/kg	# Not Determined	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 686351)							
EB1627912-042	Site 15: 130 - 140	EK067G: Total Phosphorus as P	----	100 mg/kg	# 133	70	130
EP004: Organic Matter (QCLot: 687481)							
EB1627912-002	Site 1: 20 - 30	EP004: Organic Matter	----	1.84 %	90.2	70	130
		EP004: Total Organic Carbon	----	1.04 %	90.5	70	130
EP004: Organic Matter (QCLot: 687483)							
EB1627912-022	Site 8: 90 - 100	EP004: Organic Matter	----	1.84 %	94.5	70	130
		EP004: Total Organic Carbon	----	1.04 %	94.8	70	130
EP004: Organic Matter (QCLot: 687484)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP004: Organic Matter (QCLot: 687484) - continued							
EB1627912-042	Site 15: 130 - 140	EP004: Organic Matter	----	1.84 %	98.5	70	130
		EP004: Total Organic Carbon	----	1.04 %	98.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686308)							
EB1627912-002	Site 1: 20 - 30	EP080: C6 - C9 Fraction	----	8 mg/kg	88.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686309)							
EB1627912-002	Site 1: 20 - 30	EP071: C10 - C14 Fraction	----	318 mg/kg	93.0	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	98.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686321)							
EB1627912-022	Site 8: 90 - 100	EP071: C10 - C14 Fraction	----	318 mg/kg	100	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	103	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686322)							
EB1627912-022	Site 8: 90 - 100	EP080: C6 - C9 Fraction	----	8 mg/kg	74.5	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686342)							
EB1627912-042	Site 15: 130 - 140	EP071: C10 - C14 Fraction	----	318 mg/kg	103	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	106	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 686343)							
EB1627912-042	Site 15: 130 - 140	EP080: C6 - C9 Fraction	----	8 mg/kg	73.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686308)							
EB1627912-002	Site 1: 20 - 30	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	92.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686309)							
EB1627912-002	Site 1: 20 - 30	EP071: >C10 - C16 Fraction	----	428 mg/kg	86.8	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	98.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686321)							
EB1627912-022	Site 8: 90 - 100	EP071: >C10 - C16 Fraction	----	428 mg/kg	91.6	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	103	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686322)							
EB1627912-022	Site 8: 90 - 100	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	76.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686342)							
EB1627912-042	Site 15: 130 - 140	EP071: >C10 - C16 Fraction	----	428 mg/kg	94.5	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	106	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 686343)							
EB1627912-042	Site 15: 130 - 140	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	71.4	70	130
EP080: BTEXN (QCLot: 686308)							
EB1627912-002	Site 1: 20 - 30	EP080: Benzene	71-43-2	2 mg/kg	94.9	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 686308) - continued							
EB1627912-002	Site 1: 20 - 30	EP080: Toluene	108-88-3	2 mg/kg	91.1	70	130
EP080: BTEXN (QCLot: 686322)							
EB1627912-022	Site 8: 90 - 100	EP080: Benzene	71-43-2	2 mg/kg	70.3	70	130
		EP080: Toluene	108-88-3	2 mg/kg	81.7	70	130
EP080: BTEXN (QCLot: 686343)							
EB1627912-042	Site 15: 130 - 140	EP080: Benzene	71-43-2	2 mg/kg	83.2	70	130
		EP080: Toluene	108-88-3	2 mg/kg	75.4	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1627912**	Page	: 1 of 48
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR CLAYTON RICHARDS	Telephone	: +61-7-3243 7222
Project	: 620.11227.00300 TOTAL PNG	Date Samples Received	: 24-Nov-2016
Site	: ----	Issue Date	: 17-Jan-2017
Sampler	: CLAYTON RICHARDS	No. of samples received	: 129
Order number	: 620.11227.00300	No. of samples analysed	: 118

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **Method Blank value outliers exist - please see following pages for full details.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Method Blank (MB) Values							
EG005T: Total Metals by ICP-AES	QC-MRG2-68630600	----	**Silver**	7440-22-4	4 mg/kg	2 mg/kg	**Blank result exceeds permitted value**
EG005T: Total Metals by ICP-AES	QC-MRG2-68632300	----	**Silver**	7440-22-4	7 mg/kg	2 mg/kg	**Blank result exceeds permitted value**
Duplicate (DUP) RPDs							
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EB1627912--001	Site 1: 0 - 10	**Total Kjeldahl Nitrogen as N**	----	42.3 %	0% - 20%	**RPD exceeds LOR based limits**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EB1627912--021	Site 8: 50 - 60	**Total Kjeldahl Nitrogen as N**	----	23.4 %	0% - 20%	**RPD exceeds LOR based limits**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EB1627912--051	Site 22A: 90 - 100	**Total Kjeldahl Nitrogen as N**	----	30.0 %	0% - 20%	**RPD exceeds LOR based limits**
EK067G: Total Phosphorus as P by Discrete Analyser	EB1627912--031	Site 12: 0 - 10	**Total Phosphorus as P**	----	23.4 %	0% - 20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EG005T: Total Metals by ICP-AES	QC-MRG2-68630600	----	**Silver**	7440-22-4	140 %	84-122%	**Recovery greater than upper control limit**
EG005T: Total Metals by ICP-AES	QC-MRG2-68632300	----	**Silver**	7440-22-4	162 %	84-122%	**Recovery greater than upper control limit**
EP080: BTEXN	QC-686322-002	----	**Toluene**	108-88-3	117 %	73-105%	**Recovery greater than upper control limit**
EP080: BTEXN	QC-686322-002	----	**Ethylbenzene**	100-41-4	118 %	67-104%	**Recovery greater than upper control limit**
EP080: BTEXN	QC-686322-002	----	**meta- & para-Xylene**	108-38-3 106-42-3	110 %	66-106%	**Recovery greater than upper control limit**
EP080: BTEXN	QC-686322-002	----	**ortho-Xylene**	95-47-6	116 %	68-105%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1627912--022	Site 8: 90 - 100	**Barium**	7440-39-3	132 %	70-130%	**Recovery greater than upper data quality objective**
EG005T: Total Metals by ICP-AES	EB1627912--002	Site 1: 20 - 30	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1627912--022	Site 8: 90 - 100	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1627912--042	Site 15: 130 - 140	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1627912--061	Site 1: 20 - 30 <63µm	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EG005T: Total Metals by ICP-AES	EB1627912--081	Site 8: 90 - 100 <63µm	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1627912--101	Site 15: 130 - 140 <63µm	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK067G: Total Phosphorus as P by Discrete Analyser	EB1627912--002	Site 1: 20 - 30	**Total Phosphorus as P**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK067G: Total Phosphorus as P by Discrete Analyser	EB1627912--022	Site 8: 90 - 100	**Total Phosphorus as P**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK067G: Total Phosphorus as P by Discrete Analyser	EB1627912--042	Site 15: 130 - 140	**Total Phosphorus as P**	----	133 %	70-130%	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / **Container** / Client Sample ID(s)		*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA002 : pH (Soils)							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	04-Jan-2017	22-Nov-2016	**43**	----	----	----
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 8: 50 - 60,	Site 8: 90 - 100,	03-Jan-2017	23-Nov-2016	**41**	04-Jan-2017	03-Jan-2017	**1**
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	04-Jan-2017	23-Nov-2016	**42**	----	----	----
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA002 : pH (Soils) - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	03-Jan-2017	24-Nov-2016	**40**	04-Jan-2017	03-Jan-2017	**1**
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	03-Jan-2017	25-Nov-2016	**39**	04-Jan-2017	03-Jan-2017	**1**
Site 15: 50 - 60							
Snap Lock Bag							
Site 15: 90 - 100,	Site 15: 130 - 140,	04-Jan-2017	25-Nov-2016	**40**	----	----	----
Site 15: 160 - 170,	Site 18: 0 - 10						
Snap Lock Bag							
Site 17: 0 - 10		04-Jan-2017	26-Nov-2016	**39**	----	----	----
Snap Lock Bag							
Site 19: 50 - 60		04-Jan-2017	27-Nov-2016	**38**	----	----	----
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	04-Jan-2017	28-Nov-2016	**37**	----	----	----
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EA010: Conductivity							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	04-Jan-2017	22-Nov-2016	**43**	----	----	----
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 8: 50 - 60,	Site 8: 90 - 100,	03-Jan-2017	23-Nov-2016	**41**	----	----	----
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA010: Conductivity - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	04-Jan-2017	23-Nov-2016	**42**	----	----	----
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30						
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	03-Jan-2017	24-Nov-2016	**40**	----	----	----
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	03-Jan-2017	25-Nov-2016	**39**	----	----	----
Site 15: 50 - 60							
Snap Lock Bag							
Site 15: 90 - 100,	Site 15: 130 - 140,	04-Jan-2017	25-Nov-2016	**40**	----	----	----
Site 15: 160 - 170,	Site 18: 0 - 10						
Snap Lock Bag							
Site 17: 0 - 10		04-Jan-2017	26-Nov-2016	**39**	----	----	----
Snap Lock Bag							
Site 19: 50 - 60		04-Jan-2017	27-Nov-2016	**38**	----	----	----
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	04-Jan-2017	28-Nov-2016	**37**	----	----	----
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EA029-A: pH Measurements							
Snap Lock Bag							
Site 9: 0 - 10,	Site 9: 20 - 30,	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA029-B: Acidity Trail							
Snap Lock Bag							
Site 9: 0 - 10,	Site 9: 20 - 30,	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Site 9: 50 - 60,	Site 9: 90 - 100						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA029-B: Acidity Trail - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA029-C: Sulfur Trail							
Snap Lock Bag							
Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA029-D: Calcium Values							
Snap Lock Bag							
Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA029-E: Magnesium Values							
Snap Lock Bag							
Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA029-F: Excess Acid Neutralising Capacity							
Snap Lock Bag							
Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA029-G: Retained Acidity							
Snap Lock Bag							
Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA029-H: Acid Base Accounting							
Snap Lock Bag							
Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	11-Jan-2017	17-Nov-2016	**55**	----	----	----
Snap Lock Bag							
Site 22: 90 - 100,	Site 22A: 90 - 100	11-Jan-2017	22-Nov-2016	**50**	----	----	----
EA037: Ass Field Screening Analysis							

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA037: Ass Field Screening Analysis - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 9: 0 - 10,	Site 9: 20 - 30,	12-Dec-2016	17-Nov-2016	**25**	12-Dec-2016	17-Nov-2016	**25**
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 15: 130 - 140,	Site 15: 160 - 170,	12-Dec-2016	19-Nov-2016	**23**	12-Dec-2016	19-Nov-2016	**23**
Site 18: 0 - 10							
Snap Lock Bag							
Site 17: 0 - 10		12-Dec-2016	20-Nov-2016	**22**	12-Dec-2016	20-Nov-2016	**22**
Snap Lock Bag							
Site 19: 50 - 60		12-Dec-2016	21-Nov-2016	**21**	12-Dec-2016	21-Nov-2016	**21**
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	12-Dec-2016	22-Nov-2016	**20**	12-Dec-2016	22-Nov-2016	**20**
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EA055: Moisture Content							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	----	----	----	09-Dec-2016	29-Nov-2016	**10**
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	----	----	----	09-Dec-2016	30-Nov-2016	**9**
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30,						
Site 8: 50 - 60,	Site 8: 90 - 100,						
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	----	----	----	09-Dec-2016	01-Dec-2016	**8**
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA055: Moisture Content - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	----	----	----	09-Dec-2016	02-Dec-2016	**7**
Site 15: 50 - 60,	Site 15: 90 - 100,						
Site 15: 130 - 140,	Site 15: 160 - 170,						
Site 18: 0 - 10							
Snap Lock Bag							
Site 17: 0 - 10		----	----	----	09-Dec-2016	03-Dec-2016	**6**
Snap Lock Bag							
Site 19: 50 - 60		----	----	----	09-Dec-2016	04-Dec-2016	**5**
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	----	----	----	09-Dec-2016	05-Dec-2016	**4**
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
ED005: Exchange Acidity							
Pulp Bag							
Site 3: 0 - 10,	Site 3: 20 - 30,	09-Jan-2017	13-Dec-2016	**27**	10-Jan-2017	13-Dec-2016	**28**
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Pulp Bag							
Site 6: 20 - 30,	Site 6: 50 - 60,	09-Jan-2017	14-Dec-2016	**26**	10-Jan-2017	14-Dec-2016	**27**
Site 6: 90 - 100,	Site 7: 0 - 10,						
Site 7: 20 - 30,	Site 7: 50 - 60,						
Site 7: 90 - 100,	Site 8: 50 - 60						
Pulp Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	09-Jan-2017	15-Dec-2016	**25**	10-Jan-2017	15-Dec-2016	**26**
Site 10: 50 - 60,	Site 10: 90 - 100						
Pulp Bag							
Site 12: 0 - 10,	Site 12: 20 - 30,	10-Jan-2017	15-Dec-2016	**26**	10-Jan-2017	15-Dec-2016	**26**
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Pulp Bag							
Site 15: 0 - 10		10-Jan-2017	16-Dec-2016	**25**	10-Jan-2017	16-Dec-2016	**25**

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
ED005: Exchange Acidity - Analysis Holding Time Compliance							
Pulp Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	10-Jan-2017	19-Dec-2016	**22**	10-Jan-2017	19-Dec-2016	**22**
Site 23: 50 - 60,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60						
ED007: Exchangeable Cations							
Pulp Bag							
Site 3: 0 - 10,	Site 3: 20 - 30,	09-Jan-2017	13-Dec-2016	**27**	10-Jan-2017	13-Dec-2016	**28**
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Pulp Bag							
Site 1: 0 - 10,	Site 1: 20 - 30	10-Jan-2017	13-Dec-2016	**28**	10-Jan-2017	13-Dec-2016	**28**
Pulp Bag							
Site 6: 20 - 30,	Site 6: 50 - 60,	09-Jan-2017	14-Dec-2016	**26**	10-Jan-2017	14-Dec-2016	**27**
Site 6: 90 - 100,	Site 7: 0 - 10,						
Site 7: 20 - 30,	Site 7: 50 - 60,						
Site 7: 90 - 100,	Site 8: 50 - 60						
Pulp Bag							
Site 6: 0 - 10,	Site 8: 0 - 10,	10-Jan-2017	14-Dec-2016	**27**	10-Jan-2017	14-Dec-2016	**27**
Site 8: 20 - 30,	Site 8: 90 - 100,						
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Pulp Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	09-Jan-2017	15-Dec-2016	**25**	10-Jan-2017	15-Dec-2016	**26**
Site 10: 50 - 60,	Site 10: 90 - 100						
Pulp Bag							
Site 12: 0 - 10,	Site 12: 20 - 30,	10-Jan-2017	15-Dec-2016	**26**	10-Jan-2017	15-Dec-2016	**26**
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Pulp Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	10-Jan-2017	16-Dec-2016	**25**	10-Jan-2017	16-Dec-2016	**25**
Site 15: 50 - 60,	Site 15: 90 - 100,						
Site 15: 130 - 140,	Site 15: 160 - 170						
Pulp Bag							
Site 17: 0 - 10		10-Jan-2017	17-Dec-2016	**24**	10-Jan-2017	17-Dec-2016	**24**
Pulp Bag							
Site 19: 50 - 60		10-Jan-2017	18-Dec-2016	**23**	10-Jan-2017	18-Dec-2016	**23**

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
ED007: Exchangeable Cations - Analysis Holding Time Compliance							
Pulp Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	10-Jan-2017	19-Dec-2016	**22**	10-Jan-2017	19-Dec-2016	**22**
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
ED008: Exchangeable Cations							
Snap Lock Bag							
Site 18: 0 - 10		10-Jan-2017	16-Dec-2016	**25**	10-Jan-2017	16-Dec-2016	**25**
ED045G: Chloride by Discrete Analyser							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	04-Jan-2017	13-Dec-2016	**22**	----	----	----
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 8: 50 - 60,	Site 8: 90 - 100,	03-Jan-2017	14-Dec-2016	**20**	----	----	----
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	04-Jan-2017	14-Dec-2016	**21**	----	----	----
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30						
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	03-Jan-2017	15-Dec-2016	**19**	----	----	----
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	03-Jan-2017	16-Dec-2016	**18**	----	----	----
Site 15: 50 - 60							
Snap Lock Bag							
Site 15: 90 - 100,	Site 15: 130 - 140,	04-Jan-2017	16-Dec-2016	**19**	----	----	----
Site 15: 160 - 170,	Site 18: 0 - 10						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
ED045G: Chloride by Discrete Analyser - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 17: 0 - 10		04-Jan-2017	17-Dec-2016	**18**	----	----	----
Snap Lock Bag							
Site 19: 50 - 60		04-Jan-2017	18-Dec-2016	**17**	----	----	----
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	04-Jan-2017	19-Dec-2016	**16**	----	----	----
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EG035T: Total Recoverable Mercury by FIMS							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	03-Jan-2017	13-Dec-2016	**21**	09-Jan-2017	13-Dec-2016	**27**
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	03-Jan-2017	14-Dec-2016	**20**	09-Jan-2017	14-Dec-2016	**26**
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30						
Snap Lock Bag							
Site 8: 50 - 60,	Site 8: 90 - 100,	04-Jan-2017	14-Dec-2016	**21**	09-Jan-2017	14-Dec-2016	**26**
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	04-Jan-2017	15-Dec-2016	**20**	09-Jan-2017	15-Dec-2016	**25**
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	04-Jan-2017	16-Dec-2016	**19**	09-Jan-2017	16-Dec-2016	**24**
Site 15: 50 - 60							

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EG035T: Total Recoverable Mercury by FIMS - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 15: 90 - 100,	Site 15: 130 - 140,	04-Jan-2017	16-Dec-2016	**19**	10-Jan-2017	16-Dec-2016	**25**
Site 15: 160 - 170,	Site 18: 0 - 10						
Snap Lock Bag							
Site 17: 0 - 10		04-Jan-2017	17-Dec-2016	**18**	10-Jan-2017	17-Dec-2016	**24**
Snap Lock Bag							
Site 19: 50 - 60		04-Jan-2017	18-Dec-2016	**17**	10-Jan-2017	18-Dec-2016	**23**
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	04-Jan-2017	19-Dec-2016	**16**	10-Jan-2017	19-Dec-2016	**22**
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EP004: Organic Matter							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	09-Jan-2017	22-Nov-2016	**48**	----	----	----
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	09-Jan-2017	23-Nov-2016	**47**	----	----	----
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30						
Snap Lock Bag							
Site 8: 50 - 60,	Site 8: 90 - 100,	09-Jan-2017	23-Nov-2016	**47**	----	----	----
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	09-Jan-2017	24-Nov-2016	**46**	----	----	----
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP004: Organic Matter - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	09-Jan-2017	25-Nov-2016	**45**	----	----	----
Site 15: 50 - 60,	Site 15: 90 - 100,						
Site 15: 130 - 140,	Site 15: 160 - 170,						
Site 18: 0 - 10							
Snap Lock Bag							
Site 17: 0 - 10		09-Jan-2017	26-Nov-2016	**44**	----	----	----
Snap Lock Bag							
Site 19: 50 - 60		09-Jan-2017	27-Nov-2016	**43**	----	----	----
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	09-Jan-2017	28-Nov-2016	**42**	----	----	----
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EP080/071: Total Petroleum Hydrocarbons							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	09-Dec-2016	29-Nov-2016	**10**	10-Dec-2016	29-Nov-2016	**11**
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	19-Dec-2016	29-Nov-2016	**20**	----	----	----
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	09-Dec-2016	30-Nov-2016	**9**	10-Dec-2016	30-Nov-2016	**10**
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30,						
Site 8: 50 - 60,	Site 8: 90 - 100,						
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP080/071: Total Petroleum Hydrocarbons - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	19-Dec-2016	30-Nov-2016	**19**	----	----	----
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30						
Snap Lock Bag							
Site 8: 50 - 60,	Site 8: 90 - 100,	22-Dec-2016	30-Nov-2016	**22**	----	----	----
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	09-Dec-2016	01-Dec-2016	**8**	10-Dec-2016	01-Dec-2016	**9**
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	22-Dec-2016	01-Dec-2016	**21**	----	----	----
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	09-Dec-2016	02-Dec-2016	**7**	10-Dec-2016	02-Dec-2016	**8**
Site 15: 50 - 60,	Site 15: 90 - 100,						
Site 15: 130 - 140,	Site 15: 160 - 170,						
Site 18: 0 - 10							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	22-Dec-2016	02-Dec-2016	**20**	----	----	----
Site 15: 50 - 60							
Snap Lock Bag							
Site 15: 90 - 100,	Site 15: 130 - 140,	23-Dec-2016	02-Dec-2016	**21**	----	----	----
Site 15: 160 - 170,	Site 18: 0 - 10						
Snap Lock Bag							
Site 17: 0 - 10		09-Dec-2016	03-Dec-2016	**6**	10-Dec-2016	03-Dec-2016	**7**
Snap Lock Bag							
Site 17: 0 - 10		23-Dec-2016	03-Dec-2016	**20**	----	----	----
Snap Lock Bag							
Site 19: 50 - 60		09-Dec-2016	04-Dec-2016	**5**	10-Dec-2016	04-Dec-2016	**6**

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP080/071: Total Petroleum Hydrocarbons - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 19: 50 - 60		23-Dec-2016	04-Dec-2016	**19**	----	----	----
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	09-Dec-2016	05-Dec-2016	**4**	10-Dec-2016	05-Dec-2016	**5**
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	23-Dec-2016	05-Dec-2016	**18**	----	----	----
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	09-Dec-2016	29-Nov-2016	**10**	10-Dec-2016	29-Nov-2016	**11**
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	19-Dec-2016	29-Nov-2016	**20**	----	----	----
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	09-Dec-2016	30-Nov-2016	**9**	10-Dec-2016	30-Nov-2016	**10**
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30,						
Site 8: 50 - 60,	Site 8: 90 - 100,						
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Analysis Holding Time							
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	19-Dec-2016	30-Nov-2016	**19**	----	----	----
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30						
Snap Lock Bag							
Site 8: 50 - 60,	Site 8: 90 - 100,	22-Dec-2016	30-Nov-2016	**22**	----	----	----
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	09-Dec-2016	01-Dec-2016	**8**	10-Dec-2016	01-Dec-2016	**9**
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	22-Dec-2016	01-Dec-2016	**21**	----	----	----
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	09-Dec-2016	02-Dec-2016	**7**	10-Dec-2016	02-Dec-2016	**8**
Site 15: 50 - 60,	Site 15: 90 - 100,						
Site 15: 130 - 140,	Site 15: 160 - 170,						
Site 18: 0 - 10							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	22-Dec-2016	02-Dec-2016	**20**	----	----	----
Site 15: 50 - 60							
Snap Lock Bag							
Site 15: 90 - 100,	Site 15: 130 - 140,	23-Dec-2016	02-Dec-2016	**21**	----	----	----
Site 15: 160 - 170,	Site 18: 0 - 10						
Snap Lock Bag							
Site 17: 0 - 10		09-Dec-2016	03-Dec-2016	**6**	10-Dec-2016	03-Dec-2016	**7**
Snap Lock Bag							
Site 17: 0 - 10		23-Dec-2016	03-Dec-2016	**20**	----	----	----

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Analysis Holding Time							
Snap Lock Bag							
Site 19: 50 - 60		09-Dec-2016	04-Dec-2016	**5**	10-Dec-2016	04-Dec-2016	**6**
Snap Lock Bag							
Site 19: 50 - 60		23-Dec-2016	04-Dec-2016	**19**	----	----	----
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	09-Dec-2016	05-Dec-2016	**4**	10-Dec-2016	05-Dec-2016	**5**
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	23-Dec-2016	05-Dec-2016	**18**	----	----	----
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							
EP080: BTEXN							
Snap Lock Bag							
Site 1: 0 - 10,	Site 1: 20 - 30,	09-Dec-2016	29-Nov-2016	**10**	10-Dec-2016	29-Nov-2016	**11**
Site 3: 0 - 10,	Site 3: 20 - 30,						
Site 3: 50 - 60,	Site 3: 90 - 100,						
Site 5: 0 - 10,	Site 5: 20 - 30,						
Site 5: 50 - 60,	Site 5: 90 - 100						
Snap Lock Bag							
Site 6: 0 - 10,	Site 6: 20 - 30,	09-Dec-2016	30-Nov-2016	**9**	10-Dec-2016	30-Nov-2016	**10**
Site 6: 50 - 60,	Site 6: 90 - 100,						
Site 7: 0 - 10,	Site 7: 20 - 30,						
Site 7: 50 - 60,	Site 7: 90 - 100,						
Site 8: 0 - 10,	Site 8: 20 - 30,						
Site 8: 50 - 60,	Site 8: 90 - 100,						
Site 9: 0 - 10,	Site 9: 20 - 30,						
Site 9: 50 - 60,	Site 9: 90 - 100						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP080: BTEXN - Analysis Holding Time Compliance							
Snap Lock Bag							
Site 10: 0 - 10,	Site 10: 20 - 30,	09-Dec-2016	01-Dec-2016	**8**	10-Dec-2016	01-Dec-2016	**9**
Site 10: 50 - 60,	Site 10: 90 - 100,						
Site 12: 0 - 10,	Site 12: 20 - 30,						
Site 12: 50 - 60,	Site 12: 90 - 100,						
Site 14: 0 - 10,	Site 14: 20 - 30,						
Site 14: 50 - 60							
Snap Lock Bag							
Site 15: 0 - 10,	Site 15: 20 - 30,	09-Dec-2016	02-Dec-2016	**7**	10-Dec-2016	02-Dec-2016	**8**
Site 15: 50 - 60,	Site 15: 90 - 100,						
Site 15: 130 - 140,	Site 15: 160 - 170,						
Site 18: 0 - 10							
Snap Lock Bag							
Site 17: 0 - 10		09-Dec-2016	03-Dec-2016	**6**	10-Dec-2016	03-Dec-2016	**7**
Snap Lock Bag							
Site 19: 50 - 60		09-Dec-2016	04-Dec-2016	**5**	10-Dec-2016	04-Dec-2016	**6**
Snap Lock Bag							
Site 22: 0 - 10,	Site 22: 20 - 30,	09-Dec-2016	05-Dec-2016	**4**	10-Dec-2016	05-Dec-2016	**5**
Site 22: 50 - 60,	Site 22: 90 - 100,						
Site 22A: 90 - 100,	Site 23: 0 - 10,						
Site 23: 20 - 30,	Site 23: 50 - 60,						
Site 23: 90 - 100,	Site 27: 0 - 10,						
Site 27: 20 - 30,	Site 27: 50 - 60,						
Site 27: 90 - 100							

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Control Samples (LCS)					
Total Phosporus By Discrete Analyser	5	59	8.47	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002 : pH (Soils)								
Snap Lock Bag (EA002)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**04-Jan-2017**	22-Nov-2016	×	**04-Jan-2017**	04-Jan-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EA002)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**03-Jan-2017**	23-Nov-2016	×	**04-Jan-2017**	03-Jan-2017	×
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EA002)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**04-Jan-2017**	23-Nov-2016	×	**04-Jan-2017**	04-Jan-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EA002)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**03-Jan-2017**	24-Nov-2016	×	**04-Jan-2017**	03-Jan-2017	×
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EA002)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**03-Jan-2017**	25-Nov-2016	×	**04-Jan-2017**	03-Jan-2017	×
Site 15: 50 - 60								
Snap Lock Bag (EA002)								
Site 15: 90 - 100,	Site 15: 130 - 140,	**18-Nov-2016**	**04-Jan-2017**	25-Nov-2016	×	**04-Jan-2017**	04-Jan-2017	✓
Site 15: 160 - 170,	Site 18: 0 - 10							
Snap Lock Bag (EA002)								
Site 17: 0 - 10		**19-Nov-2016**	**04-Jan-2017**	26-Nov-2016	×	**04-Jan-2017**	04-Jan-2017	✓
Snap Lock Bag (EA002)								
Site 19: 50 - 60		**20-Nov-2016**	**04-Jan-2017**	27-Nov-2016	×	**04-Jan-2017**	04-Jan-2017	✓
Snap Lock Bag (EA002)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**04-Jan-2017**	28-Nov-2016	×	**04-Jan-2017**	04-Jan-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010: Conductivity								
Snap Lock Bag (EA010)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**04-Jan-2017**	22-Nov-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EA010)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**03-Jan-2017**	23-Nov-2016	×	**04-Jan-2017**	31-Jan-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EA010)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**04-Jan-2017**	23-Nov-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EA010)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**03-Jan-2017**	24-Nov-2016	×	**04-Jan-2017**	31-Jan-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EA010)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**03-Jan-2017**	25-Nov-2016	×	**04-Jan-2017**	31-Jan-2017	✓
Site 15: 50 - 60								
Snap Lock Bag (EA010)								
Site 15: 90 - 100,	Site 15: 130 - 140,	**18-Nov-2016**	**04-Jan-2017**	25-Nov-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 15: 160 - 170,	Site 18: 0 - 10							
Snap Lock Bag (EA010)								
Site 17: 0 - 10		**19-Nov-2016**	**04-Jan-2017**	26-Nov-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Snap Lock Bag (EA010)								
Site 19: 50 - 60		**20-Nov-2016**	**04-Jan-2017**	27-Nov-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Snap Lock Bag (EA010)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**04-Jan-2017**	28-Nov-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-A: pH Measurements								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
EA029-B: Acidity Trail								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
EA029-C: Sulfur Trail								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
EA029-D: Calcium Values								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
EA029-E: Magnesium Values								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
EA029-F: Excess Acid Neutralising Capacity								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
EA029-G: Retained Acidity								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-H: Acid Base Accounting								
Snap Lock Bag (EA029) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**11-Jan-2017**	17-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
Snap Lock Bag (EA029) Site 22: 90 - 100,	Site 22A: 90 - 100	**21-Nov-2016**	**11-Jan-2017**	22-Nov-2016	×	**11-Jan-2017**	11-Apr-2017	✓
EA037: Ass Field Screening Analysis								
Snap Lock Bag (EA037) Site 9: 0 - 10, Site 9: 50 - 60,	Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**12-Dec-2016**	17-Nov-2016	×	**12-Dec-2016**	17-Nov-2016	×
Snap Lock Bag (EA037) Site 15: 130 - 140, Site 18: 0 - 10	Site 15: 160 - 170,	**18-Nov-2016**	**12-Dec-2016**	19-Nov-2016	×	**12-Dec-2016**	19-Nov-2016	×
Snap Lock Bag (EA037) Site 17: 0 - 10		**19-Nov-2016**	**12-Dec-2016**	20-Nov-2016	×	**12-Dec-2016**	20-Nov-2016	×
Snap Lock Bag (EA037) Site 19: 50 - 60		**20-Nov-2016**	**12-Dec-2016**	21-Nov-2016	×	**12-Dec-2016**	21-Nov-2016	×
Snap Lock Bag (EA037) Site 22: 0 - 10, Site 22: 50 - 60, Site 22A: 90 - 100, Site 23: 20 - 30, Site 23: 90 - 100, Site 27: 20 - 30, Site 27: 90 - 100	Site 22: 20 - 30, Site 22: 90 - 100, Site 23: 0 - 10, Site 23: 50 - 60, Site 27: 0 - 10, Site 27: 50 - 60,	**21-Nov-2016**	**12-Dec-2016**	22-Nov-2016	×	**12-Dec-2016**	22-Nov-2016	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Snap Lock Bag (EA055-103)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**----**	----	----	**09-Dec-2016**	29-Nov-2016	×
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EA055-103)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**----**	----	----	**09-Dec-2016**	30-Nov-2016	×
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30,							
Site 8: 50 - 60,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EA055-103)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**----**	----	----	**09-Dec-2016**	01-Dec-2016	×
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EA055-103)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**----**	----	----	**09-Dec-2016**	02-Dec-2016	×
Site 15: 50 - 60,	Site 15: 90 - 100,							
Site 15: 130 - 140,	Site 15: 160 - 170,							
Site 18: 0 - 10								
Snap Lock Bag (EA055-103)								
Site 17: 0 - 10		**19-Nov-2016**	**----**	----	----	**09-Dec-2016**	03-Dec-2016	×
Snap Lock Bag (EA055-103)								
Site 19: 50 - 60		**20-Nov-2016**	**----**	----	----	**09-Dec-2016**	04-Dec-2016	×
Snap Lock Bag (EA055-103)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**----**	----	----	**09-Dec-2016**	05-Dec-2016	×
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA058: Emerson Aggregate Test								
Snap Lock Bag (EA058)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**----**	----	----	**11-Jan-2017**	14-May-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EA058)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**----**	----	----	**11-Jan-2017**	15-May-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30,							
Site 8: 50 - 60,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EA058)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**----**	----	----	**11-Jan-2017**	16-May-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EA058)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**----**	----	----	**11-Jan-2017**	17-May-2017	✓
Site 15: 50 - 60,	Site 15: 90 - 100,							
Site 15: 130 - 140,	Site 15: 160 - 170,							
Site 18: 0 - 10								
Snap Lock Bag (EA058)								
Site 17: 0 - 10		**19-Nov-2016**	**----**	----	----	**11-Jan-2017**	18-May-2017	✓
Snap Lock Bag (EA058)								
Site 19: 50 - 60		**20-Nov-2016**	**----**	----	----	**11-Jan-2017**	19-May-2017	✓
Snap Lock Bag (EA058)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**----**	----	----	**11-Jan-2017**	20-May-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA150: Soil Classification - National Committee on Soil and Terrain (2009)								
Snap Lock Bag (EA150H)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**----**	----	----	**06-Jan-2017**	14-May-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EA150H)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**----**	----	----	**06-Jan-2017**	15-May-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30,							
Site 8: 50 - 60,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EA150H)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**----**	----	----	**06-Jan-2017**	16-May-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EA150H)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**----**	----	----	**06-Jan-2017**	17-May-2017	✓
Site 15: 50 - 60,	Site 15: 90 - 100,							
Site 15: 130 - 140,	Site 15: 160 - 170,							
Site 18: 0 - 10								
Snap Lock Bag (EA150H)								
Site 17: 0 - 10		**19-Nov-2016**	**----**	----	----	**06-Jan-2017**	18-May-2017	✓
Snap Lock Bag (EA150H)								
Site 19: 50 - 60		**20-Nov-2016**	**----**	----	----	**06-Jan-2017**	19-May-2017	✓
Snap Lock Bag (EA150H)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**----**	----	----	**06-Jan-2017**	20-May-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA152: Soil Particle Density								
Snap Lock Bag (EA152)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**----**	----	----	**06-Jan-2017**	14-May-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EA152)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**----**	----	----	**06-Jan-2017**	15-May-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30,							
Site 8: 50 - 60,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EA152)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**----**	----	----	**06-Jan-2017**	16-May-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EA152)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**----**	----	----	**06-Jan-2017**	17-May-2017	✓
Site 15: 50 - 60,	Site 15: 90 - 100,							
Site 15: 130 - 140,	Site 15: 160 - 170,							
Site 18: 0 - 10								
Snap Lock Bag (EA152)								
Site 17: 0 - 10		**19-Nov-2016**	**----**	----	----	**06-Jan-2017**	18-May-2017	✓
Snap Lock Bag (EA152)								
Site 19: 50 - 60		**20-Nov-2016**	**----**	----	----	**06-Jan-2017**	19-May-2017	✓
Snap Lock Bag (EA152)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**----**	----	----	**06-Jan-2017**	20-May-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED005: Exchange Acidity								
Pulp Bag (ED005)								
Site 3: 0 - 10,	Site 3: 20 - 30,	**15-Nov-2016**	**09-Jan-2017**	13-Dec-2016	×	**10-Jan-2017**	13-Dec-2016	×
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Pulp Bag (ED005)								
Site 6: 20 - 30,	Site 6: 50 - 60,	**16-Nov-2016**	**09-Jan-2017**	14-Dec-2016	×	**10-Jan-2017**	14-Dec-2016	×
Site 6: 90 - 100,	Site 7: 0 - 10,							
Site 7: 20 - 30,	Site 7: 50 - 60,							
Site 7: 90 - 100,	Site 8: 50 - 60							
Pulp Bag (ED005)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**09-Jan-2017**	15-Dec-2016	×	**10-Jan-2017**	15-Dec-2016	×
Site 10: 50 - 60,	Site 10: 90 - 100							
Pulp Bag (ED005)								
Site 12: 0 - 10,	Site 12: 20 - 30,	**17-Nov-2016**	**10-Jan-2017**	15-Dec-2016	×	**10-Jan-2017**	15-Dec-2016	×
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Pulp Bag (ED005)								
Site 15: 0 - 10		**18-Nov-2016**	**10-Jan-2017**	16-Dec-2016	×	**10-Jan-2017**	16-Dec-2016	×
Pulp Bag (ED005)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**10-Jan-2017**	19-Dec-2016	×	**10-Jan-2017**	19-Dec-2016	×
Site 23: 50 - 60,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED007: Exchangeable Cations								
Pulp Bag (ED007)								
Site 3: 0 - 10,	Site 3: 20 - 30,	**15-Nov-2016**	**09-Jan-2017**	13-Dec-2016	×	**10-Jan-2017**	13-Dec-2016	×
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Pulp Bag (ED007)								
Site 1: 0 - 10,	Site 1: 20 - 30	**15-Nov-2016**	**10-Jan-2017**	13-Dec-2016	×	**10-Jan-2017**	13-Dec-2016	×
Pulp Bag (ED007)								
Site 6: 20 - 30,	Site 6: 50 - 60,	**16-Nov-2016**	**09-Jan-2017**	14-Dec-2016	×	**10-Jan-2017**	14-Dec-2016	×
Site 6: 90 - 100,	Site 7: 0 - 10,							
Site 7: 20 - 30,	Site 7: 50 - 60,							
Site 7: 90 - 100,	Site 8: 50 - 60							
Pulp Bag (ED007)								
Site 6: 0 - 10,	Site 8: 0 - 10,	**16-Nov-2016**	**10-Jan-2017**	14-Dec-2016	×	**10-Jan-2017**	14-Dec-2016	×
Site 8: 20 - 30,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Pulp Bag (ED007)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**09-Jan-2017**	15-Dec-2016	×	**10-Jan-2017**	15-Dec-2016	×
Site 10: 50 - 60,	Site 10: 90 - 100							
Pulp Bag (ED007)								
Site 12: 0 - 10,	Site 12: 20 - 30,	**17-Nov-2016**	**10-Jan-2017**	15-Dec-2016	×	**10-Jan-2017**	15-Dec-2016	×
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Pulp Bag (ED007)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**10-Jan-2017**	16-Dec-2016	×	**10-Jan-2017**	16-Dec-2016	×
Site 15: 50 - 60,	Site 15: 90 - 100,							
Site 15: 130 - 140,	Site 15: 160 - 170							
Pulp Bag (ED007)								
Site 17: 0 - 10		**19-Nov-2016**	**10-Jan-2017**	17-Dec-2016	×	**10-Jan-2017**	17-Dec-2016	×
Pulp Bag (ED007)								
Site 19: 50 - 60		**20-Nov-2016**	**10-Jan-2017**	18-Dec-2016	×	**10-Jan-2017**	18-Dec-2016	×
Pulp Bag (ED007)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**10-Jan-2017**	19-Dec-2016	×	**10-Jan-2017**	19-Dec-2016	×
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED008: Exchangeable Cations							
Snap Lock Bag (ED008)							
Site 18: 0 - 10	**18-Nov-2016**	**10-Jan-2017**	16-Dec-2016	×	**10-Jan-2017**	16-Dec-2016	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser								
Snap Lock Bag (ED045G)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**04-Jan-2017**	13-Dec-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (ED045G)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**03-Jan-2017**	14-Dec-2016	×	**04-Jan-2017**	31-Jan-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (ED045G)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**04-Jan-2017**	14-Dec-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (ED045G)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**03-Jan-2017**	15-Dec-2016	×	**04-Jan-2017**	31-Jan-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (ED045G)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**03-Jan-2017**	16-Dec-2016	×	**04-Jan-2017**	31-Jan-2017	✓
Site 15: 50 - 60								
Snap Lock Bag (ED045G)								
Site 15: 90 - 100,	Site 15: 130 - 140,	**18-Nov-2016**	**04-Jan-2017**	16-Dec-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 15: 160 - 170,	Site 18: 0 - 10							
Snap Lock Bag (ED045G)								
Site 17: 0 - 10		**19-Nov-2016**	**04-Jan-2017**	17-Dec-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Snap Lock Bag (ED045G)								
Site 19: 50 - 60		**20-Nov-2016**	**04-Jan-2017**	18-Dec-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Snap Lock Bag (ED045G)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**04-Jan-2017**	19-Dec-2016	×	**04-Jan-2017**	01-Feb-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EG005T: Total Metals by ICP-AES							
Pulp Bag (-63µm) (EG005T) Site 1: 0 - 10 - <63µm, Site 1: 20 - 30 - <63µm, Site 3: 0 - 10 - <63µm, Site 3: 20 - 30 - <63µm, Site 3: 50 - 60 - <63µm, Site 3: 90 - 100 - <63µm, Site 5: 0 - 10 - <63µm, Site 5: 20 - 30 - <63µm, Site 5: 50 - 60 - <63µm, Site 5: 90 - 100 - <63µm, Site 6: 0 - 10 - <63µm, Site 6: 20 - 30 - <63µm, Site 6: 50 - 60 - <63µm, Site 6: 90 - 100 - <63µm, Site 7: 0 - 10 - <63µm, Site 7: 20 - 30 - <63µm, Site 7: 50 - 60 - <63µm, Site 7: 90 - 100 - <63µm, Site 8: 0 - 10 - <63µm, Site 8: 20 - 30 - <63µm, Site 8: 50 - 60 - <63µm, Site 8: 90 - 100 - <63µm, Site 9: 0 - 10 - <63µm, Site 9: 20 - 30 - <63µm, Site 9: 50 - 60 - <63µm, Site 9: 90 - 100 - <63µm, Site 10: 0 - 10 - <63µm, Site 10: 20 - 30 - <63µm, Site 10: 50 - 60 - <63µm, Site 12: 0 - 10 - <63µm, Site 10: 90 - 100 - <63µm, Site 12: 20 - 30 - <63µm, Site 12: 50 - 60 - <63µm, Site 12: 90 - 100 - <63µm, Site 14: 0 - 10 - <63µm, Site 14: 20 - 30 - <63µm, Site 14: 50 - 60 - <63µm, Site 15: 0 - 10 - <63µm, Site 15: 20 - 30 - <63µm, Site 15: 50 - 60 - <63µm, Site 15: 90 - 100 - <63µm, Site 15: 130 - 140 - <63µm, Site 15: 160 - 170 - <63µm, Site 17: 0 - 10 - <63µm, Site 18: 0 - 10 - <63µm, Site 19: 50 - 60 - <63µm, Site 22: 0 - 10 - <63µm, Site 22: 20 - 30 - <63µm, Site 22: 50 - 60 - <63µm, Site 22: 90 - 100 - <63µm, Site 22A: 90 - 100 - <63µm, Site 23: 0 - 10 - <63µm, Site 23: 20 - 30 - <63µm, Site 23: 50 - 60 - <63µm, Site 23: 90 - 100 - <63µm, Site 27: 0 - 10 - <63µm, Site 27: 20 - 30 - <63µm, Site 27: 50 - 60 - <63µm, Site 27: 90 - 100 - <63µm	**13-Jan-2017**	**13-Jan-2017**	12-Jul-2017	✓	**13-Jan-2017**	12-Jul-2017	✓
Snap Lock Bag (EG005T) Site 1: 0 - 10, Site 1: 20 - 30, Site 3: 0 - 10, Site 3: 20 - 30, Site 3: 50 - 60, Site 3: 90 - 100, Site 5: 0 - 10, Site 5: 20 - 30, Site 5: 50 - 60, Site 5: 90 - 100	**15-Nov-2016**	**03-Jan-2017**	14-May-2017	✓	**06-Jan-2017**	14-May-2017	✓
Snap Lock Bag (EG005T)							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES - Continued								
Site 6: 0 - 10, Site 6: 50 - 60, Site 7: 0 - 10, Site 7: 50 - 60, Site 8: 0 - 10,	Site 6: 20 - 30, Site 6: 90 - 100, Site 7: 20 - 30, Site 7: 90 - 100, Site 8: 20 - 30	**16-Nov-2016**	**03-Jan-2017**	15-May-2017	✓	**06-Jan-2017**	15-May-2017	✓
Snap Lock Bag (EG005T) Site 8: 50 - 60, Site 9: 0 - 10, Site 9: 50 - 60,	Site 8: 90 - 100, Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**04-Jan-2017**	15-May-2017	✓	**06-Jan-2017**	15-May-2017	✓
Snap Lock Bag (EG005T) Site 10: 0 - 10, Site 10: 50 - 60, Site 12: 0 - 10, Site 12: 50 - 60, Site 14: 0 - 10, Site 14: 50 - 60	Site 10: 20 - 30, Site 10: 90 - 100, Site 12: 20 - 30, Site 12: 90 - 100, Site 14: 20 - 30,	**17-Nov-2016**	**04-Jan-2017**	16-May-2017	✓	**06-Jan-2017**	16-May-2017	✓
Snap Lock Bag (EG005T) Site 15: 0 - 10, Site 15: 50 - 60	Site 15: 20 - 30,	**18-Nov-2016**	**04-Jan-2017**	17-May-2017	✓	**06-Jan-2017**	17-May-2017	✓
Snap Lock Bag (EG005T) Site 15: 90 - 100, Site 15: 160 - 170,	Site 15: 130 - 140, Site 18: 0 - 10	**18-Nov-2016**	**04-Jan-2017**	17-May-2017	✓	**09-Jan-2017**	17-May-2017	✓
Snap Lock Bag (EG005T) Site 17: 0 - 10		**19-Nov-2016**	**04-Jan-2017**	18-May-2017	✓	**09-Jan-2017**	18-May-2017	✓
Snap Lock Bag (EG005T) Site 19: 50 - 60		**20-Nov-2016**	**04-Jan-2017**	19-May-2017	✓	**09-Jan-2017**	19-May-2017	✓
Snap Lock Bag (EG005T) Site 22: 0 - 10, Site 22: 50 - 60, Site 22A: 90 - 100, Site 23: 20 - 30, Site 23: 90 - 100, Site 27: 20 - 30, Site 27: 90 - 100	Site 22: 20 - 30, Site 22: 90 - 100, Site 23: 0 - 10, Site 23: 50 - 60, Site 27: 0 - 10, Site 27: 50 - 60,	**21-Nov-2016**	**04-Jan-2017**	20-May-2017	✓	**09-Jan-2017**	20-May-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Pulp Bag (-63µm) (EG035T)							
Site 1: 0 - 10 - <63µm, Site 1: 20 - 30 - <63µm, Site 3: 0 - 10 - <63µm, Site 3: 20 - 30 - <63µm, Site 3: 50 - 60 - <63µm, Site 3: 90 - 100 - <63µm, Site 5: 0 - 10 - <63µm, Site 5: 20 - 30 - <63µm, Site 5: 50 - 60 - <63µm, Site 5: 90 - 100 - <63µm, Site 6: 0 - 10 - <63µm, Site 6: 20 - 30 - <63µm, Site 6: 50 - 60 - <63µm, Site 6: 90 - 100 - <63µm, Site 7: 0 - 10 - <63µm, Site 7: 20 - 30 - <63µm, Site 7: 50 - 60 - <63µm, Site 7: 90 - 100 - <63µm, Site 8: 0 - 10 - <63µm, Site 8: 20 - 30 - <63µm, Site 8: 50 - 60 - <63µm, Site 8: 90 - 100 - <63µm, Site 9: 0 - 10 - <63µm, Site 9: 20 - 30 - <63µm, Site 9: 50 - 60 - <63µm, Site 9: 90 - 100 - <63µm, Site 10: 0 - 10 - <63µm, Site 10: 20 - 30 - <63µm, Site 10: 50 - 60 - <63µm, Site 12: 0 - 10 - <63µm, Site 10: 90 - 100 - <63µm, Site 12: 20 - 30 - <63µm, Site 12: 50 - 60 - <63µm, Site 12: 90 - 100 - <63µm, Site 14: 0 - 10 - <63µm, Site 14: 20 - 30 - <63µm, Site 14: 50 - 60 - <63µm, Site 15: 0 - 10 - <63µm, Site 15: 20 - 30 - <63µm, Site 15: 50 - 60 - <63µm, Site 15: 90 - 100 - <63µm, Site 15: 130 - 140 - <63µm, Site 15: 160 - 170 - <63µm, Site 17: 0 - 10 - <63µm, Site 18: 0 - 10 - <63µm, Site 19: 50 - 60 - <63µm, Site 22: 0 - 10 - <63µm, Site 22: 20 - 30 - <63µm, Site 22: 50 - 60 - <63µm, Site 22: 90 - 100 - <63µm, Site 22A: 90 - 100 - <63µm, Site 23: 0 - 10 - <63µm, Site 23: 20 - 30 - <63µm, Site 23: 50 - 60 - <63µm, Site 23: 90 - 100 - <63µm, Site 27: 0 - 10 - <63µm, Site 27: 20 - 30 - <63µm, Site 27: 50 - 60 - <63µm, Site 27: 90 - 100 - <63µm	**13-Jan-2017**	**13-Jan-2017**	10-Feb-2017	✓	**16-Jan-2017**	10-Feb-2017	✓
Snap Lock Bag (EG035T)							
Site 1: 0 - 10, Site 1: 20 - 30, Site 3: 0 - 10, Site 3: 20 - 30, Site 3: 50 - 60, Site 3: 90 - 100, Site 5: 0 - 10, Site 5: 20 - 30, Site 5: 50 - 60, Site 5: 90 - 100	**15-Nov-2016**	**03-Jan-2017**	13-Dec-2016	×	**09-Jan-2017**	13-Dec-2016	×
Snap Lock Bag (EG035T)							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS - Continued								
Site 6: 0 - 10, Site 6: 50 - 60, Site 7: 0 - 10, Site 7: 50 - 60, Site 8: 0 - 10,	Site 6: 20 - 30, Site 6: 90 - 100, Site 7: 20 - 30, Site 7: 90 - 100, Site 8: 20 - 30	**16-Nov-2016**	**03-Jan-2017**	14-Dec-2016	×	**09-Jan-2017**	14-Dec-2016	×
Snap Lock Bag (EG035T) Site 8: 50 - 60, Site 9: 0 - 10, Site 9: 50 - 60,	Site 8: 90 - 100, Site 9: 20 - 30, Site 9: 90 - 100	**16-Nov-2016**	**04-Jan-2017**	14-Dec-2016	×	**09-Jan-2017**	14-Dec-2016	×
Snap Lock Bag (EG035T) Site 10: 0 - 10, Site 10: 50 - 60, Site 12: 0 - 10, Site 12: 50 - 60, Site 14: 0 - 10, Site 14: 50 - 60	Site 10: 20 - 30, Site 10: 90 - 100, Site 12: 20 - 30, Site 12: 90 - 100, Site 14: 20 - 30,	**17-Nov-2016**	**04-Jan-2017**	15-Dec-2016	×	**09-Jan-2017**	15-Dec-2016	×
Snap Lock Bag (EG035T) Site 15: 0 - 10, Site 15: 50 - 60	Site 15: 20 - 30,	**18-Nov-2016**	**04-Jan-2017**	16-Dec-2016	×	**09-Jan-2017**	16-Dec-2016	×
Snap Lock Bag (EG035T) Site 15: 90 - 100, Site 15: 160 - 170,	Site 15: 130 - 140, Site 18: 0 - 10	**18-Nov-2016**	**04-Jan-2017**	16-Dec-2016	×	**10-Jan-2017**	16-Dec-2016	×
Snap Lock Bag (EG035T) Site 17: 0 - 10		**19-Nov-2016**	**04-Jan-2017**	17-Dec-2016	×	**10-Jan-2017**	17-Dec-2016	×
Snap Lock Bag (EG035T) Site 19: 50 - 60		**20-Nov-2016**	**04-Jan-2017**	18-Dec-2016	×	**10-Jan-2017**	18-Dec-2016	×
Snap Lock Bag (EG035T) Site 22: 0 - 10, Site 22: 50 - 60, Site 22A: 90 - 100, Site 23: 20 - 30, Site 23: 90 - 100, Site 27: 20 - 30, Site 27: 90 - 100	Site 22: 20 - 30, Site 22: 90 - 100, Site 23: 0 - 10, Site 23: 50 - 60, Site 27: 0 - 10, Site 27: 50 - 60,	**21-Nov-2016**	**04-Jan-2017**	19-Dec-2016	×	**10-Jan-2017**	19-Dec-2016	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Snap Lock Bag (EK059G)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**04-Jan-2017**	14-May-2017	✓	**04-Jan-2017**	14-May-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EK059G)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**03-Jan-2017**	15-May-2017	✓	**04-Jan-2017**	15-May-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EK059G)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**04-Jan-2017**	15-May-2017	✓	**04-Jan-2017**	15-May-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EK059G)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**03-Jan-2017**	16-May-2017	✓	**04-Jan-2017**	16-May-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EK059G)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**03-Jan-2017**	17-May-2017	✓	**04-Jan-2017**	17-May-2017	✓
Site 15: 50 - 60								
Snap Lock Bag (EK059G)								
Site 15: 90 - 100,	Site 15: 130 - 140,	**18-Nov-2016**	**04-Jan-2017**	17-May-2017	✓	**04-Jan-2017**	17-May-2017	✓
Site 15: 160 - 170,	Site 18: 0 - 10							
Snap Lock Bag (EK059G)								
Site 17: 0 - 10		**19-Nov-2016**	**04-Jan-2017**	18-May-2017	✓	**04-Jan-2017**	18-May-2017	✓
Snap Lock Bag (EK059G)								
Site 19: 50 - 60		**20-Nov-2016**	**04-Jan-2017**	19-May-2017	✓	**04-Jan-2017**	19-May-2017	✓
Snap Lock Bag (EK059G)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**04-Jan-2017**	20-May-2017	✓	**04-Jan-2017**	20-May-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Snap Lock Bag (EK061G)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**04-Jan-2017**	14-May-2017	✓	**10-Jan-2017**	14-May-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EK061G)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**04-Jan-2017**	15-May-2017	✓	**10-Jan-2017**	15-May-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EK061G)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**05-Jan-2017**	15-May-2017	✓	**10-Jan-2017**	15-May-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EK061G)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**05-Jan-2017**	16-May-2017	✓	**10-Jan-2017**	16-May-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EK061G)								
Site 15: 90 - 100,	Site 15: 130 - 140,	**18-Nov-2016**	**05-Jan-2017**	17-May-2017	✓	**09-Jan-2017**	17-May-2017	✓
Site 15: 160 - 170,	Site 18: 0 - 10							
Snap Lock Bag (EK061G)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**05-Jan-2017**	17-May-2017	✓	**10-Jan-2017**	17-May-2017	✓
Site 15: 50 - 60								
Snap Lock Bag (EK061G)								
Site 17: 0 - 10		**19-Nov-2016**	**05-Jan-2017**	18-May-2017	✓	**09-Jan-2017**	18-May-2017	✓
Snap Lock Bag (EK061G)								
Site 19: 50 - 60		**20-Nov-2016**	**05-Jan-2017**	19-May-2017	✓	**09-Jan-2017**	19-May-2017	✓
Snap Lock Bag (EK061G)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**05-Jan-2017**	20-May-2017	✓	**09-Jan-2017**	20-May-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser								
Snap Lock Bag (EK067G)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**04-Jan-2017**	14-May-2017	✓	**10-Jan-2017**	14-May-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EK067G)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**04-Jan-2017**	15-May-2017	✓	**10-Jan-2017**	15-May-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EK067G)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**05-Jan-2017**	15-May-2017	✓	**10-Jan-2017**	15-May-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EK067G)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**05-Jan-2017**	16-May-2017	✓	**10-Jan-2017**	16-May-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EK067G)								
Site 15: 90 - 100,	Site 15: 130 - 140,	**18-Nov-2016**	**05-Jan-2017**	17-May-2017	✓	**09-Jan-2017**	17-May-2017	✓
Site 15: 160 - 170,	Site 18: 0 - 10							
Snap Lock Bag (EK067G)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**05-Jan-2017**	17-May-2017	✓	**10-Jan-2017**	17-May-2017	✓
Site 15: 50 - 60								
Snap Lock Bag (EK067G)								
Site 17: 0 - 10		**19-Nov-2016**	**05-Jan-2017**	18-May-2017	✓	**09-Jan-2017**	18-May-2017	✓
Snap Lock Bag (EK067G)								
Site 19: 50 - 60		**20-Nov-2016**	**05-Jan-2017**	19-May-2017	✓	**09-Jan-2017**	19-May-2017	✓
Snap Lock Bag (EK067G)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**05-Jan-2017**	20-May-2017	✓	**09-Jan-2017**	20-May-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP004: Organic Matter								
Snap Lock Bag (EP004)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**09-Jan-2017**	22-Nov-2016	×	**10-Jan-2017**	06-Feb-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EP004)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**09-Jan-2017**	23-Nov-2016	×	**10-Jan-2017**	06-Feb-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EP004)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**09-Jan-2017**	23-Nov-2016	×	**11-Jan-2017**	06-Feb-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EP004)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**09-Jan-2017**	24-Nov-2016	×	**11-Jan-2017**	06-Feb-2017	✓
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EP004)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**09-Jan-2017**	25-Nov-2016	×	**11-Jan-2017**	06-Feb-2017	✓
Site 15: 50 - 60,	Site 15: 90 - 100,							
Site 15: 130 - 140,	Site 15: 160 - 170,							
Site 18: 0 - 10								
Snap Lock Bag (EP004)								
Site 17: 0 - 10		**19-Nov-2016**	**09-Jan-2017**	26-Nov-2016	×	**11-Jan-2017**	06-Feb-2017	✓
Snap Lock Bag (EP004)								
Site 19: 50 - 60		**20-Nov-2016**	**09-Jan-2017**	27-Nov-2016	×	**11-Jan-2017**	06-Feb-2017	✓
Snap Lock Bag (EP004)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**09-Jan-2017**	28-Nov-2016	×	**11-Jan-2017**	06-Feb-2017	✓
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Snap Lock Bag (EP080)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**09-Dec-2016**	29-Nov-2016	×	**10-Dec-2016**	29-Nov-2016	×
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EP071)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**19-Dec-2016**	29-Nov-2016	×	**21-Dec-2016**	28-Jan-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EP080)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**09-Dec-2016**	30-Nov-2016	×	**10-Dec-2016**	30-Nov-2016	×
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30,							
Site 8: 50 - 60,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EP071)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**19-Dec-2016**	30-Nov-2016	×	**21-Dec-2016**	28-Jan-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EP071)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**22-Dec-2016**	30-Nov-2016	×	**28-Dec-2016**	31-Jan-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EP080)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**09-Dec-2016**	01-Dec-2016	×	**10-Dec-2016**	01-Dec-2016	×
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EP071)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons - Continued								
Site 10: 0 - 10, Site 10: 50 - 60, Site 12: 0 - 10, Site 12: 50 - 60, Site 14: 0 - 10, Site 14: 50 - 60	Site 10: 20 - 30, Site 10: 90 - 100, Site 12: 20 - 30, Site 12: 90 - 100, Site 14: 20 - 30,	**17-Nov-2016**	**22-Dec-2016**	01-Dec-2016	×	**28-Dec-2016**	31-Jan-2017	✓
Snap Lock Bag (EP080) Site 15: 0 - 10, Site 15: 50 - 60, Site 15: 130 - 140, Site 18: 0 - 10	Site 15: 20 - 30, Site 15: 90 - 100, Site 15: 160 - 170,	**18-Nov-2016**	**09-Dec-2016**	02-Dec-2016	×	**10-Dec-2016**	02-Dec-2016	×
Snap Lock Bag (EP071) Site 15: 0 - 10, Site 15: 50 - 60	Site 15: 20 - 30,	**18-Nov-2016**	**22-Dec-2016**	02-Dec-2016	×	**28-Dec-2016**	31-Jan-2017	✓
Snap Lock Bag (EP071) Site 15: 90 - 100, Site 15: 160 - 170,	Site 15: 130 - 140, Site 18: 0 - 10	**18-Nov-2016**	**23-Dec-2016**	02-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓
Snap Lock Bag (EP080) Site 17: 0 - 10		**19-Nov-2016**	**09-Dec-2016**	03-Dec-2016	×	**10-Dec-2016**	03-Dec-2016	×
Snap Lock Bag (EP071) Site 17: 0 - 10		**19-Nov-2016**	**23-Dec-2016**	03-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓
Snap Lock Bag (EP080) Site 19: 50 - 60		**20-Nov-2016**	**09-Dec-2016**	04-Dec-2016	×	**10-Dec-2016**	04-Dec-2016	×
Snap Lock Bag (EP071) Site 19: 50 - 60		**20-Nov-2016**	**23-Dec-2016**	04-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓
Snap Lock Bag (EP080) Site 22: 0 - 10, Site 22: 50 - 60, Site 22A: 90 - 100, Site 23: 20 - 30, Site 23: 90 - 100, Site 27: 20 - 30, Site 27: 90 - 100	Site 22: 20 - 30, Site 22: 90 - 100, Site 23: 0 - 10, Site 23: 50 - 60, Site 27: 0 - 10, Site 27: 50 - 60,	**21-Nov-2016**	**09-Dec-2016**	05-Dec-2016	×	**10-Dec-2016**	05-Dec-2016	×
Snap Lock Bag (EP071) Site 22: 0 - 10, Site 22: 50 - 60, Site 22A: 90 - 100, Site 23: 20 - 30, Site 23: 90 - 100, Site 27: 20 - 30, Site 27: 90 - 100	Site 22: 20 - 30, Site 22: 90 - 100, Site 23: 0 - 10, Site 23: 50 - 60, Site 27: 0 - 10, Site 27: 50 - 60,	**21-Nov-2016**	**23-Dec-2016**	05-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Snap Lock Bag (EP080)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**09-Dec-2016**	29-Nov-2016	×	**10-Dec-2016**	29-Nov-2016	×
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EP071)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**19-Dec-2016**	29-Nov-2016	×	**21-Dec-2016**	28-Jan-2017	✓
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EP080)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**09-Dec-2016**	30-Nov-2016	×	**10-Dec-2016**	30-Nov-2016	×
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30,							
Site 8: 50 - 60,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EP071)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**19-Dec-2016**	30-Nov-2016	×	**21-Dec-2016**	28-Jan-2017	✓
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30							
Snap Lock Bag (EP071)								
Site 8: 50 - 60,	Site 8: 90 - 100,	**16-Nov-2016**	**22-Dec-2016**	30-Nov-2016	×	**28-Dec-2016**	31-Jan-2017	✓
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EP080)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**09-Dec-2016**	01-Dec-2016	×	**10-Dec-2016**	01-Dec-2016	×
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EP071)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
Site 10: 0 - 10, Site 10: 50 - 60, Site 12: 0 - 10, Site 12: 50 - 60, Site 14: 0 - 10, Site 14: 50 - 60	Site 10: 20 - 30, Site 10: 90 - 100, Site 12: 20 - 30, Site 12: 90 - 100, Site 14: 20 - 30,	**17-Nov-2016**	**22-Dec-2016**	01-Dec-2016	×	**28-Dec-2016**	31-Jan-2017	✓
Snap Lock Bag (EP080) Site 15: 0 - 10, Site 15: 50 - 60, Site 15: 130 - 140, Site 18: 0 - 10	Site 15: 20 - 30, Site 15: 90 - 100, Site 15: 160 - 170,	**18-Nov-2016**	**09-Dec-2016**	02-Dec-2016	×	**10-Dec-2016**	02-Dec-2016	×
Snap Lock Bag (EP071) Site 15: 0 - 10, Site 15: 50 - 60	Site 15: 20 - 30,	**18-Nov-2016**	**22-Dec-2016**	02-Dec-2016	×	**28-Dec-2016**	31-Jan-2017	✓
Snap Lock Bag (EP071) Site 15: 90 - 100, Site 15: 160 - 170,	Site 15: 130 - 140, Site 18: 0 - 10	**18-Nov-2016**	**23-Dec-2016**	02-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓
Snap Lock Bag (EP080) Site 17: 0 - 10		**19-Nov-2016**	**09-Dec-2016**	03-Dec-2016	×	**10-Dec-2016**	03-Dec-2016	×
Snap Lock Bag (EP071) Site 17: 0 - 10		**19-Nov-2016**	**23-Dec-2016**	03-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓
Snap Lock Bag (EP080) Site 19: 50 - 60		**20-Nov-2016**	**09-Dec-2016**	04-Dec-2016	×	**10-Dec-2016**	04-Dec-2016	×
Snap Lock Bag (EP071) Site 19: 50 - 60		**20-Nov-2016**	**23-Dec-2016**	04-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓
Snap Lock Bag (EP080) Site 22: 0 - 10, Site 22: 50 - 60, Site 22A: 90 - 100, Site 23: 20 - 30, Site 23: 90 - 100, Site 27: 20 - 30, Site 27: 90 - 100	Site 22: 20 - 30, Site 22: 90 - 100, Site 23: 0 - 10, Site 23: 50 - 60, Site 27: 0 - 10, Site 27: 50 - 60,	**21-Nov-2016**	**09-Dec-2016**	05-Dec-2016	×	**10-Dec-2016**	05-Dec-2016	×
Snap Lock Bag (EP071) Site 22: 0 - 10, Site 22: 50 - 60, Site 22A: 90 - 100, Site 23: 20 - 30, Site 23: 90 - 100, Site 27: 20 - 30, Site 27: 90 - 100	Site 22: 20 - 30, Site 22: 90 - 100, Site 23: 0 - 10, Site 23: 50 - 60, Site 27: 0 - 10, Site 27: 50 - 60,	**21-Nov-2016**	**23-Dec-2016**	05-Dec-2016	×	**28-Dec-2016**	01-Feb-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Snap Lock Bag (EP080)								
Site 1: 0 - 10,	Site 1: 20 - 30,	**15-Nov-2016**	**09-Dec-2016**	29-Nov-2016	×	**10-Dec-2016**	29-Nov-2016	×
Site 3: 0 - 10,	Site 3: 20 - 30,							
Site 3: 50 - 60,	Site 3: 90 - 100,							
Site 5: 0 - 10,	Site 5: 20 - 30,							
Site 5: 50 - 60,	Site 5: 90 - 100							
Snap Lock Bag (EP080)								
Site 6: 0 - 10,	Site 6: 20 - 30,	**16-Nov-2016**	**09-Dec-2016**	30-Nov-2016	×	**10-Dec-2016**	30-Nov-2016	×
Site 6: 50 - 60,	Site 6: 90 - 100,							
Site 7: 0 - 10,	Site 7: 20 - 30,							
Site 7: 50 - 60,	Site 7: 90 - 100,							
Site 8: 0 - 10,	Site 8: 20 - 30,							
Site 8: 50 - 60,	Site 8: 90 - 100,							
Site 9: 0 - 10,	Site 9: 20 - 30,							
Site 9: 50 - 60,	Site 9: 90 - 100							
Snap Lock Bag (EP080)								
Site 10: 0 - 10,	Site 10: 20 - 30,	**17-Nov-2016**	**09-Dec-2016**	01-Dec-2016	×	**10-Dec-2016**	01-Dec-2016	×
Site 10: 50 - 60,	Site 10: 90 - 100,							
Site 12: 0 - 10,	Site 12: 20 - 30,							
Site 12: 50 - 60,	Site 12: 90 - 100,							
Site 14: 0 - 10,	Site 14: 20 - 30,							
Site 14: 50 - 60								
Snap Lock Bag (EP080)								
Site 15: 0 - 10,	Site 15: 20 - 30,	**18-Nov-2016**	**09-Dec-2016**	02-Dec-2016	×	**10-Dec-2016**	02-Dec-2016	×
Site 15: 50 - 60,	Site 15: 90 - 100,							
Site 15: 130 - 140,	Site 15: 160 - 170,							
Site 18: 0 - 10								
Snap Lock Bag (EP080)								
Site 17: 0 - 10		**19-Nov-2016**	**09-Dec-2016**	03-Dec-2016	×	**10-Dec-2016**	03-Dec-2016	×
Snap Lock Bag (EP080)								
Site 19: 50 - 60		**20-Nov-2016**	**09-Dec-2016**	04-Dec-2016	×	**10-Dec-2016**	04-Dec-2016	×
Snap Lock Bag (EP080)								
Site 22: 0 - 10,	Site 22: 20 - 30,	**21-Nov-2016**	**09-Dec-2016**	05-Dec-2016	×	**10-Dec-2016**	05-Dec-2016	×
Site 22: 50 - 60,	Site 22: 90 - 100,							
Site 22A: 90 - 100,	Site 23: 0 - 10,							
Site 23: 20 - 30,	Site 23: 50 - 60,							
Site 23: 90 - 100,	Site 27: 0 - 10,							
Site 27: 20 - 30,	Site 27: 50 - 60,							
Site 27: 90 - 100								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
GEO26: Sieving								
Snap Lock Bag (GEO26C)								
Site 1: 0 - 10 - <63µm,	Site 1: 20 - 30 - <63µm,	**15-Nov-2016**	**13-Jan-2017**	14-May-2017	✓	**----**	----	----
Site 3: 0 - 10 - <63µm,	Site 3: 20 - 30 - <63µm,							
Site 3: 50 - 60 - <63µm,	Site 3: 90 - 100 - <63µm,							
Site 5: 0 - 10 - <63µm,	Site 5: 20 - 30 - <63µm,							
Site 5: 50 - 60 - <63µm,	Site 5: 90 - 100 - <63µm							
Snap Lock Bag (GEO26C)								
Site 6: 0 - 10 - <63µm,	Site 6: 20 - 30 - <63µm,	**16-Nov-2016**	**13-Jan-2017**	15-May-2017	✓	**----**	----	----
Site 6: 50 - 60 - <63µm,	Site 6: 90 - 100 - <63µm,							
Site 7: 0 - 10 - <63µm,	Site 7: 20 - 30 - <63µm,							
Site 7: 50 - 60 - <63µm,	Site 7: 90 - 100 - <63µm,							
Site 8: 0 - 10 - <63µm,	Site 8: 20 - 30 - <63µm,							
Site 8: 50 - 60 - <63µm,	Site 8: 90 - 100 - <63µm,							
Site 9: 0 - 10 - <63µm,	Site 9: 20 - 30 - <63µm,							
Site 9: 50 - 60 - <63µm,	Site 9: 90 - 100 - <63µm							
Snap Lock Bag (GEO26C)								
Site 10: 0 - 10 - <63µm,	Site 10: 20 - 30 - <63µm,	**17-Nov-2016**	**13-Jan-2017**	16-May-2017	✓	**----**	----	----
Site 10: 50 - 60 - <63µm,	Site 10: 90 - 100 - <63µm,							
Site 12: 0 - 10 - <63µm,	Site 12: 20 - 30 - <63µm,							
Site 12: 50 - 60 - <63µm,	Site 12: 90 - 100 - <63µm,							
Site 14: 0 - 10 - <63µm,	Site 14: 20 - 30 - <63µm,							
Site 14: 50 - 60 - <63µm								
Snap Lock Bag (GEO26C)								
Site 15: 0 - 10 - <63µm,	Site 15: 20 - 30 - <63µm,	**18-Nov-2016**	**13-Jan-2017**	17-May-2017	✓	**----**	----	----
Site 15: 50 - 60 - <63µm,	Site 15: 90 - 100 - <63µm,							
Site 15: 130 - 140 - <63µm,	Site 15: 160 - 170 - <63µm,							
Site 18: 0 - 10 - <63µm								
Snap Lock Bag (GEO26C)								
Site 17: 0 - 10 - <63µm		**19-Nov-2016**	**13-Jan-2017**	18-May-2017	✓	**----**	----	----
Snap Lock Bag (GEO26C)								
Site 19: 50 - 60 - <63µm		**20-Nov-2016**	**13-Jan-2017**	19-May-2017	✓	**----**	----	----
Snap Lock Bag (GEO26C)								
Site 22: 0 - 10 - <63µm,	Site 22: 20 - 30 - <63µm,	**21-Nov-2016**	**13-Jan-2017**	20-May-2017	✓	**----**	----	----
Site 22: 50 - 60 - <63µm,	Site 22: 90 - 100 - <63µm,							
Site 22A: 90 - 100 - <63µm,	Site 23: 0 - 10 - <63µm,							
Site 23: 20 - 30 - <63µm,	Site 23: 50 - 60 - <63µm,							
Site 23: 90 - 100 - <63µm,	Site 27: 0 - 10 - <63µm,							
Site 27: 20 - 30 - <63µm,	Site 27: 50 - 60 - <63µm,							
Site 27: 90 - 100 - <63µm								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride Soluble By Discrete Analyser	ED045G	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchange Acidity by 1M Potassium Chloride	ED005	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	7	58	12.07	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	12	118	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	12	118	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chloride Soluble By Discrete Analyser	ED045G	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	4	58	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	118	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	118	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	5	59	8.47	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB)							
Chloride Soluble By Discrete Analyser	ED045G	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchange Acidity by 1M Potassium Chloride	ED005	2	34	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	4	58	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	118	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	118	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	118	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	118	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	In house: Referenced to APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 104)
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Emerson Aggregate Test	EA058	SOIL	In house: Referenced to AS1289.3.8.1. Testing is performed only on soils with suitable aggregates; sands and gravels are usually unsuitable for this test. The test classifies the behaviour of soil aggregates, when immersed, on their coherence in water.
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Soil Particle Density	EA152	SOIL	Soil Particle Density by AS 1289.3.5.1-2006 : Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Exchange Acidity by 1M Potassium Chloride	ED005	SOIL	In house: referenced to Rayment and Lyons, (2011), method 15G1. This method is unsuitable for near neutral and alkaline soils. NATA accreditation does not cover performance of this service.
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons (2011) Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Exchangeable Cations with pre-treatment	ED008	SOIL	In house: Referenced to Rayment & Higginson (2011) Method 15A2. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Chloride Soluble By Discrete Analyser	ED045G	SOIL	In house: Referenced to APHA 4500-Cl- E. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm. Analysis is performed on a 1:5 soil / water leachate.
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	SOIL	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by Chemical Reduction, and direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	In house: Referenced to APHA 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NOx) By Discrete Analyser	EK062G	SOIL	In house: Referenced to APHA 4500 Norg/NO3- Total Nitrogen is determined as the sum of TKN and Oxidised Nitrrogen, each determined seperately as N.
Total Phosporus By Discrete Analyser	EK067G	SOIL	In house: Referenced to APHA 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.
Organic Matter	EP004	SOIL	In house: Referenced to AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Higginson (1992) method 15A1. A 1M NH4Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
TKN/TP Digestion	EK061/EK067	SOIL	In house: Referenced to APHA 4500 Norg- D; APHA 4500 P - H. Macro Kjeldahl digestion.
Drying only	EN020D	SOIL	In house
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Organic Matter	EP004-PR	SOIL	In house: Referenced to AS1289.4.1.1 - 1997. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Sieving (fine to -63µm)	GEO26C	SOIL	In house: The sample is sieved to -63µm and the fines are then analysed per the client's request.
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Appendix C – Geological Field Observations

Appendic C - Geological Field Observations

METHOD	STATE OR TERRITORY	COORDINATEDATUM	PROJECTION	LATITUDE	LONGITUDE	GPS METHOD	ACCURACY ESTIMATE	DATE	TYPE OF SITE	SITE NUMBER	SITE AREA NAME	SLOPE EVALUATION	SLOPE VALUE	SLOPE CLASSES	MORPTHOLOGICAL TYPE	RELIEF	MODAL TERRAIN TYPE	LANDFORM ELEMENT TYPE	OBSERVATION TYPE	GRAIN SIZE	TEXTURE	STRUCTURE	POROSITY	MINERAL COMPOSITION	STRENGTH	UNCONSOLIDATED MATERIAL CLASSIFICATION	DISCONTINUITY SPACING	ALTERATION	LITHOLOGIC TYPE	SUBSTRATE MASS GENETIC TYPES	NOTES
G	PNG	WGS84	L	-7.34869	145.18997	S	3	15-11-2016	F	1	ETL-1	A	15	MO	M - Midslope	Low	RL -Rolling Low Hills	HSL - Hillslope	E - Existing vertical exposure	2	F	V - Massive	1	Q, F	W - M	N/A	M - Massive 1-3m	F	Sandstone	SR - Sedimentary Rock	On the trail leading to Weathered sandstone outcrop, steeply dipping carbonaceous, laminated mudstones and sandstone beds, creek and bridge exposures photographed.
G	PNG	WGS84	L	-7.33559	145.21872	S	3	15-11-2016	F	2	CPF Creek Line	A	2	GE	F - Flat	Extremely Low	GP -Gently undulating plain	STC - Stream Channel	E - Existing vertical exposure	1,2	F	B - Bedded	1	Q, L, C	W - M	N/A	B - Blocky, modeately jointed 300mm - 1m	L	Clay / Mudstone / Coal	SR - Sedimentary Rock	Mottled clayey soil in creek bank. Appeared to be a coal seam outcrop at the creek level, with associated sandstone/coal fragments. Turbid grey water runoff characteristic of dark grey, carbonaceous, mudstone and siltstone weathering. Flat jungle terrain, meandering creek.
G	PNG	WGS84	L	-7.35113	145.19216	S	3	15-11-2016	F	3	CPF Cleared Area	A	1	VG	F - Flat	Extremely Low	GP - Gently undulating plain	PLA - Plain	P - Soil Pit	1,2,3	F	N/A	2	Q,L	W	GV / S / C	N/A	L, F	Gravel / Clay	AL - Alluvium	Sampled from dug trench on CPF site, easily dug, flat jungle terrain, site being felled for the CPF.
G	PNG	WGS84	L	-7.15724	145.13493	S	3	15-11-2016	F	4	ANT-5	A	1,35	LE,ST	S - Simple Slope	High	SH - Steep Hills	EMB - Embankment CUT - Cut Face	E - Existing vertical exposure	2	F	F - Fissile	1	L,F,M,Q	W	Z / C	F - Fractured, intensely jointed 50-300mm	O - Other	Mudstone	SR - Sedimentary Rock	Some groundwater seeps, landslides present, vegetation dieback (gully erosion on side slopes from drill pad, drainage, from pad installation earthworks, drilling waste water practices), well head capped, flat pad cut out from a ridge.
G	PNG	WGS84	L	-7.14032	145.14095	S	3	15-11-2016	F	5	ANT-3	A	1,35	LE,ST	S - Simple Slope	High	SH - Steep Hills	EMB - Embankment CUT - Cut Face	E - Existing vertical exposure	2	F	F - Fissile	1	L,F,M,Q	W	Z / C	F - Fractured, intensely jointed 50-300mm	O - Other	Mudstone	SR - Sedimentary Rock	Some groundwater seeps, algal growth near seep, some basaltic boulders used as bollards on Ant 3 Camp site, assumed sourced from nearby creek deposits. From Antelope 3 camp adjacent Homoclinal ridge and ravine observed.
G	PNG	WGS84	L	-7.64972	145.26226	S	3	16-11-2016	F	6	Fly Camp E	A	5	GE	S - Simple slope	Low	UL - Low Hills	HSL - Hillslope	P - Soil Pit					L,Q	W	C / S	N/A	N/A	N/A		No rock exposure in this location, soil pit, dark brown clay
G	PNG	WGS84	L	-7.50458	145.21363	S	3	16-11-2016	F	7	Fly Camp B	A	5	GE	S - Simple slope	Low	UL - Low Hills	HSL - Hillslope	E - Existing vertical exposure	1,2,3	F	F - Fissile C - Concretionary B - Bedded	1, 2	Q,F,L	W,MS	S / G / Z / C	B, M	N/A	Sandstone / Mudstone	SR - Sedimentary Rock	Base of expsoure 3m coarse sandstone, crossbedding, fining upwards to a 1m laminated, fissile mudstone unit. Outcrop adjacent to current, well used logging track.
G	PNG	WGS84	L	-7.31336	145.13815	S	3	16-11-2016	F	8	Fly Camp D	A	1	VG	F - Flat	Extremely Low	LP - Level Plain	MEA - Meander Plain	E - Existing vertical exposure	1,2	N/A	N/A	2	Q,F,M,D,L	N/A	S,Z,C	N/A	N/A	N/A	AL - Alluvium	Fly Camp B - Utilised for soil sampling in levee bank exposure, slow flowing meandering creek.
G	PNG	WGS84	L	-7.27525	145.19418	S	3	16-11-2016	F	9	ETL-2	A	5	GE	S - Simple slope	Low	UL - Low Hills	HSL - Hillslope	E - Existing vertical exposure	1,2,3	F	B - Bedded	2	Q,F,M,D,L	W	GV,S,Z,C	B	N/A	Soil / Gravel /	SR - Sedimentary Rock	Creek exposure weakly cemented conglomerate, overlain by weak bioturbated (worm burrows) mudstone transitioning into soil.
G	PNG	WGS84	L	-7.05908	145.13529	S	3	17-11-2016	F	10	Elk-2	A	10	MO	S - Simple slope	High	RH - Rolling hills	HSL - Hillslope	E - Existing vertical exposure	2	F	B - Bedded	1	F,D,L,Q	M - Moderately Strong	Z,C	F - Fractured, intensely jointed 50-300mm	F	Siltstone	SR - Sedimentary Rock	Dark grey siltstone found further downslope from the pad and red soil sample which appears characteristic of a basaltic origin, anedotely unweathered basaltic roadbase won from quarry, explosives magazine on nearby track.
G	PNG	WGS84	L	-7.06584	145.14067	S	3	17-11-2016	F	11	Between Elk-2 & Elk-3	A	10	MO	S - Simple slope	High	RH - Rolling hills	HSL - Hillslope	E - Existing vertical exposure		F	B,F,L	2		VW to S	S,Z,C	F / C	N/A	Siltstone / Sandstone	SR - Sedimentary Rock	Series of road cuttings, steeply dipping interbedded fissile, weak mudstone, siltstone and indurated fine grained sandstones, in areas deformed, crushed fault zones.
G	PNG	WGS84	L	-7.06918	145.12993	S	3	17-11-2016	F	12	Elk-3	A	5	GE	S - Simple slope	High	RH - Rolling hills	HSL - Hillslope	E - Existing vertical exposure	2,3	F	B	2	Q,F	M-S	S	M - Massive 1-3m	S	Mudstone / Siltstone	SR - Sedimentary Rock	Cutting adjacent to drill pad, rock outcrop below soil sample.
G	PNG	WGS84	L	-7.11088	145.13849	S	3	17-11-2016	F	13	Elk-4	A	15	MO	S - Simple slope	High	RH - Rolling hills	HSL - Hillslope	O - Outcrop, where presumed continuous with substrate	2	F	B,F,L	1	Q,F,D,L	W-S	S,Z,C	F,M	N/A	Mudstone / Siltstone / Sandstone	SR - Sedimentary Rock	Area adjacent to "Christmas tree" and well pad. Dipping/foliated interbedded strata, weaker, weathered soil and laminated siltstone landslip on indurated, thickly bedded sandstone.
G	PNG	WGS84	L	-7.14898	145.15753	S	3	17-11-2016	F	14	ANT-6	A	20	MO / ST	S - Simple slope	High	SH - Steep Hills	HSL - Hillslope	E - Existing vertical exposure	1,2	F	B, F	1	Q,F,K	W-S	S,Z,ML	B, M	N/A	Siltstone / Sandstone / Limestone	SR - Sedimentary Rock	Rehabbed well pad site, signicant man-made highwall exposures, natural sandstone cliff, minor rockfall, interbedded siltstone/sandstone, fossillfereous boundstone limestone.
G	PNG	WGS84	L	-7.35595	145.22398	S	3	18-11-2016	F	15	Herd Base	A	5	GE	S - Simple slope	Low	UL - Low Hills	BAN - Bank	O - Outcrop, where presumed continuous with substrate	3,2,1	F	B, V	2	Q,F,L	W-M	GV, S,Z,C	B, M	N/A	Sandstone / Conglomerate	SR - Sedimentary Rock, AL- Alluvium	Exposures on track to gravel quarry accessed on foot from Herd base. Sandstone cutting, loose gravel quarry used to supply road sheeting and construction materials, excavated material no explosives used.
G	PNG	WGS84	L	-7.85191	145.28582	S	3	19-11-2016	F	16	Harevavo	A	1	VG	F - Flat	Extremely Low	GP - Gently undulating plain	BRI - Beach Ridge	P - Soil Pit	2,1	F	N/A	2	F,M,D,Q	VW	S	N/A	N/A	N/A	BE - Beach Sediment	Dark grey, immature beach sand containing heavy minerals.
G	PNG	WGS84	L	-7.85165	145.29578	S	3	19-11-2016	F	17	Harevavo	A	1	VG	F - Flat	Extremely Low	GP - Gently undulating plain	BRI - Beach Ridge	P - Soil Pit	2,1	F	N/A	2	F,M,D,Q	VW	S	N/A	N/A	N/A	BE - Beach Sediment	Dark grey, immature beach sand containing heavy minerals.
G	PNG	WGS84	L	-7.8552	145.31617	S	3	20-11-2016	F	18	Mareke	A	1	LE-Level	V - Open Depression (vale)	Extremely Low	GP - Gently undulating plain	EST - Estuary	P - Soil Pit	1	N/A	N/A	1	L,D	VW	CL	N/A	N/A	N/A	AL - Alluvium	Dark grey clay/mud.
G	PNG	WGS84	L	-7.85466	145.32849	S	3	20-11-2016	F	19	Kavava	A	1	VG	F - Flat	Extremely Low	GP - Gently undulating plain	BRI - Beach Ridge	E - Existing vertical exposure	1	N/A	N/A	2	L,M,D	VW	CL,Z,S	N/A	N/A	N/A	BE - Beach Sediment	Dark grey, immature beach sand containing heavy minerals.
G	PNG	WGS84	L	-7.86282	145.34412	S	3	20-11-2016	F	20	Oru	A	1	VG	F - Flat	Extremely Low	GP - Gently undulating plain	BRI - Beach Ridge	E - Existing vertical exposure	1	N/A	N/A	2	L,M,D	VW	CL,Z,S	N/A	N/A	N/A	BE - Beach Sediment	Dark grey, immature beach sand containing heavy minerals.
G	PNG	WGS84	L	-7.8685	145.35186	S	3	20-11-2016	F	21	Herakela	A	1	VG	F - Flat	Extremely Low	GP - Gently undulating plain	LAG - Lagoon	E - Existing vertical exposure	1	N/A	N/A	2	L,M,D	VW	CL,Z,S	N/A	N/A	N/A	BE - Beach Sediment	Dark grey, immature beach sand containing heavy minerals.
G	PNG	WGS84	L	-7.78997	145.26257	S	3	21-11-2016	F	22	Fly Camp F	A	1	VG	F - Flat	Extremely Low	GR - Gently undulating rises	EST - Estuary	E - Existing vertical exposure	1	N/A	N/A	2	L,M,D	VW	CL	N/A	N/A	N/A	AL - Alluvium	Soil and mud on steep estuary bank, fresh and tidal influence.
G	PNG	WGS84	L	-7.79996	145.2793	S	3	21-11-2016	F	23	T1	A	1	VG	F - Flat	Very Low - 9m - 30m	GR - Gently undulating rises	PLA - Plain	P - Soil Pit	1	N/A	N/A	2	L, Q, D	VW	CL,Z,S	N/A	N/A	N/A	AL - Alluvium	Soil pit in forrest adjacent to farmers banana plantation, SWL intersected @ <1m.
G	PNG	WGS84	L	-7.81715	145.28836	S	3	21-11-2016	F	24	Arehava	A	5	GE	F - Flat	Very Low - 9m - 30m	GR - Gently undulating rises	PLA - Plain	E - Existing vertical exposure	1	N/A	N/A	2	L, Q, D	VW	CL,Z,S	N/A	N/A	N/A	AL - Alluvium	Dark brown/black clay exposed in creek, used by villagers to make pottery items.
G	PNG	WGS84	L	-7.81712	145.28837	S	3	21-11-2016	F	25	Arehava	A	5	GE	F - Flat	Very Low - 9m - 30m	GR - Gently undulating rises	PLA - Plain	E - Existing vertical exposure	1	N/A	N/A	2	L, Q, D	VW	CL,Z,S	N/A	N/A	N/A	AL - Alluvium	
G	PNG	WGS84	L	-7.82366	145.2997	S	3	21-11-2016	F	26	T2	A	5	GE	F - Flat	Very Low - 9m - 30m	GR - Gently undulating rises	PLA - Plain	E - Existing vertical exposure	1	N/A	N/A	2	L, Q, D	VW	CL,Z,S	N/A	N/A	N/A	AL - Alluvium	
G	PNG	WGS84	L	-7.82926	145.31654	S	3	21-11-2016	F	27	Paevera	A	5	GE	F - Flat	Very Low - 9m - 30m	GR - Gently undulating rises	PLA - Plain	P - Soil Pit	1	N/A	N/A	2	L, Q, D	VW	CL,Z,S	N/A	N/A	N/A	AL - Alluvium	Adjacent to small creek, swampy, moist area, GPS readings below sea level.

Note: This table was developed based on the classifications and abbreviations of the Australian Soil and Land Survey Field Handbook (3rd Edition) The National Committee on Soil and Terrain

Appendix C - Explanatory Notes

METHOD	R - Map Reference	G - GPS	S - Survey						
STATE OR TERRITORY	PNG - Papua New Guinea								
COORDINATE DATUM	WGS84 - WORLD GEODETIC SYSTEM 1984	GDA94 - Geodetic Datum of Australia 1994							
PROJECTION	M - Universal Transverse Mercator System	L - Geographic (latitude and longitude)							
GPS METHOD	S - Single unit GPS	D - Differential GPS							
ACCURACY ESTIMATE	1 - <1m	2 - 1m-5m	3 - 5m-15m						
TYPE OF SITE	G - Grid Site	F - Free survey Site							
SLOPE EVALUATION	T - Tripod Mounted instrument and staff	A - Abney level or clinometer	P - Contour Plan > 1:10000	E - Estimate					
SLOPE VALUE	Slope Tangent in Degrees								
SLOPE CLASSES	LE - Level	VG - Very Gently inclined	GE - Gently inclined	MO - Moderately inclined	ST - Steep	VS -Very Steep	PR - Preciptious	CL - Cliffed	
MORPTHOLOGICAL TYPE	C - Crest	H - Hillock	R - Ridge	S - Simple slope	U - Upper slope	M - Mid-slope	L - Lower slope	F - Flat	V - Open Depression (vale)
RELIEF	M - Very High >300m	High - 90m - 300m	Low - 30m - 90m	Very Low - 9m - 30m	Extremely Low - <9m				
MODAL TERRAIN TYPE	LP - Level Plain	GR - Gently undulating rises	GP - Gently undulating plain	UH - Undulating Hills	UL - Undulating Low hills	UP - Undulating Plain			
OBSERVATION TYPE	P - Soil Pit	E - Existing vertical exposure	C - Undisturbed soil core	A - Auger Boring	O - Outcrop, where presumed continuous with substrate				
GRAIN SIZE	1 - <0.06mm	2 - >0.06 - 2mm	3 - >2mm						
TEXTURE	F - Fragmental	X - Crystalline (non-porphyritic)	P - Porphyritic	A - Amorphous					
STRUCTURE	V - Massive	S - Vesicular	C - Concretionary	P - Platy	R - Vermicular	B - Bedded	F - Fissile	L - Foliated	
POROSITY	0 - Non porous;dense	1 - Slightly porous	2 - Porous						
MINERAL COMPOSITION	Q - Quartz	F - Feldspar	M - Mica	D - Dark Minerals	L - Clays (Argillaceous)	K - Carbonates	S - Sequioxides	C - Carbonaceous	
STRENGTH	VW- Very weak	W - Weak	M - Moderately Strong	S - Strong	VS - Very				
UNCONSOLIDATED MATERIAL CLASSIFICATION	BO - Boulders	SN - Stones	CB - Cobbles	GV - Gravel	S - Sand	Z - Silt	C - Clay	KS - Calcareous Sand	ML - Marl
DISCONTINUITY SPACING	S - Solid >3m	M - Massive 1-3m	B - Blocky, moderately jointed 300mm - 1m	F - Fractured, intensely jointed 50-300mm	C - Crushed/Shuttered, <50mm				
ALTERATION	F - Ferruginised	L - Kaolinised	S - Silicified	K - Calicified	O - Other				