Proposed Expansion of Cessnock Correctional Centre Phase 2 Contamination Assessment

Lindsay Street, Cessnock

NEW16P-0119-AC
14 September 2016

Qualtest
LABORATORY (NSW) PTY LTD

GEOTECHNICAL I LABORATORY I EARTHWORKS I QUARRY I CONSTRUCTION MATERIAL TESTING

14 September 2016

Lend Lease
30 The Bond, 30 Hickson Road,
Millers Point NSW2000

Attention: Mr Jeremy Tompson

Dear Jeremy

RE: PROPOSED EXPANSION OF CESSNOCK CORRECTIONAL CENTRE LINDSAY STREET, CESSNOCK PHASE 2 CONTAMINATION ASSESSMENT

Please find enclosed our Phase 2 Contamination Assessment (CA) report for the proposed expansion of Cessnock Correctional Centre, located at Lot 2 DP76202 and Lot 3 DP76202, Lindsay Street, Cessnock.

Based on the brief provided (email from Lend Lease dated 26 July 2016) and subsequent telephone discussion, the development is understood to comprise a '*400 bed proposed maximum security development'* covering an area about 400m by 400m, together with new administration buildings, parking and roads adjacent to the east. It is understood that site earthworks will involve cut and fill of up to about 6m depths.

A Preliminary Contamination Assessment (PCA) was carried out by Qualtest in August 2016, ref: NEW16P-0119-AB, dated 26 August 2016. It is noted that the site layout has been rotated to the east following the PCA which has results in the site layout being extended approximately 250m to the east and reduced by approximately 80m to the north and approximately 120m to the west. For the purposes of this assessment the 'site' is defined as the works area carried out as part of the PCA and current investigation for the proposed 400 bed developed and portions of the new administration buildings, parking and roads development area

The PCA and CA was carried out in conjunction with a geotechnical investigation also carried out by Qualtest on the site (ref: NEW16P-0119-AA, dated, 26 August, 2016).

This report was prepared in accordance with the relevant sections of the NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd

Libby Betz
Senior Environmental Scientist

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Attachments:

1.0 Introduction

Qualtest Laboratory NSW Pty Ltd (Qualtest) is pleased to present this Phase 2 Contamination Assessment (CA) report to Lend Lease for the proposed expansion of Cessnock Correctional Centre, located at Lot 2 DP76202 and Lot 3 DP76202, Lindsay Street, Cessnock.

Based on the brief provided (email from Lend Lease dated 26 July 2016) and subsequent telephone discussion, the development is understood to comprise a *'400 bed proposed maximum security development'* covering an area about 400m by 400m, together with new administration buildings, parking and roads adjacent to the east. It is understood that site earthworks will involve cut and fill of up to about 6m depths.

A Preliminary Contamination Assessment (PCA) was carried out by Qualtest in August 2016, ref: NEW16P-0119-AB, dated 26 August 2016. It is noted that the site layout has been rotated to the east following the PCA which has results in the site layout being extended approximately 250m to the east and reduced by approximately 80m to the north and approximately 120m to the west.

For the purposes of this assessment the 'site' is defined as the works area carried out as part of the PCA and current investigation for the proposed 400 bed developed and portions of the new administration buildings, parking and roads development area, as shown on Figure 2, Appendix A

The PCA and CA was carried out in conjunction with a geotechnical investigation also carried out by Qualtest on the site (ref: NEW16P-0119-AD, dated, 12 September 2016).

This report was prepared in accordance with the relevant sections of the NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites.

2.0 Objectives

The objectives of the CA were to:

- Assess the presence of soil contamination within the Areas of Environmental Concern (AECs) previously identified at the site;
- Develop a Conceptual Site Model (CSM) for the site based on the findings of the assessment; and
- Provide recommendations for further assessments, remediation and/or management, as required.

3.0 Scope of Works

In order to meet the above objectives, Qualtest carried out the following scope of works:

- An additional desk study and review of historic aerial photography over the past 50 years to assess the additional site area;
- Collection of environmental soil samples from ten stockpiles (SP1 to SP10);
- Excavation and collection of environmental soil samples from 1 test pit location in an area of identified fill (TP32);
- Collection of environmental soil samples from 6 geotechnical test pit locations (TP27 to TP31 and TP33);
- Laboratory analysis of selected soil samples for a suite of potential chemicals of concern (CoC0s); and

- Preparation of a Phase 2 Contamination Report, including a preliminary waste classification of the material and options for onsite re-use and/or disposal.

4.0 Site Description

4.1 Site Identification

The site is located to the south west of the existing Cessnock Correctional Centre located at Lindsay Street, Cessnock, NSW, as shown in Figure 1. The site is a rectangular shaped parcel of land and is made up of part of Lot 2 DP76202 and part of Lot 3 DP76202. The site covers an area of approximately 15 hectares (ha). The site is bound by a gravel driveway and bushland to the north west, the existing Cessnock Correction Centre to the north east and east, bush land and residential properties to the south west, The Oaks Golf and Country Club to the to the south east, and Oaky creek (with bushland beyond) to the west. An unnamed dam was also observed approximately 20m to the south east of the site.

Photographs of the site, taken on the day of the site investigations, are shown in Appendix E.

4.2 Historical Aerial Review

In order to assess the additional 250m of the site not covered in the previous PCA, Qualtest carried out an additional review of historical aerial photographs between 1961 and 2010. Based on the aerial photograph review the site appeared to consist of vacant grass land from 1962 to 1994 when a small number of demountable buildings appear to have been stored in the north/north eastern portion of the site. The site appears to remain relatively unchanged until 2007 when a small amount of land scarring is evident in the northern western and north eastern portion of the site.

In 2010 land scaring is evident in the north and fill mounds/stockpiles appear to be present in the centre and northern portions of the site. The land scaring and stockpiles appear to coincide with earthworks/constructions works being carried out on the existing Correctional Centre to the north east of the site. Additional demountable buildings also appear to be present in the eastern portion of the site. A copy of the Aerial photographs are included in Appendix C.

4.3 Site Interview

An interview was held with Mr Allan Provenzano who has works at the Correction Facility for the past 30 years. The interview revealed the following information:

- Approximately 8 - 10 years ago material excavated during earth works of the maximum security prison (located to the north east of the site) was temporarily stockpiled on the site. The material was later reused on the golf course adjacent to the site and/or disposed offsite;
- With the exception of the stockpiling of material, the western portion of the site has remained bush/grass land for the past 30 years;
- Approximately 10 years ago the north and eastern portion of the site was cut to filled/terraced to provide levelled areas to store the demountable buildings; and
- The demountable buildings are stored on the site and stripped/dismantled by inmates in the maintenance shed located to the north east of the site.

4.4 Topography and Drainage

Reference to the NSW Land and Property Information Spatial Information Exchange website (https://six.nsw.gov.au/wps/portal/) indicated the elevation of the site ranged from

approximately 100m AHD in the centre portion of the site to 90m AHD in the eastern and western portions of the site.

During field investigations the western portion of the site surface was observed to slope towards the west-south west. The eastern portion of the site surface was observed to slope to the south east.

Surface water would be expected to infiltrate into site soils, with excess surface water from the western portion of the site draining towards Oaky Creek, located along the western boundary of the site and excess surface water from the eastern portion draining to the unnamed dam located approximately 20m to the south east of the site.

It is noted that Oaky Creek appears to have been dammed adjacent to the site. The overflow from Oaky Creek dam appears to flow to the south west towards a series of additional dams. The unnamed dam located to the south east of the site also flows to a series of additional dams before discharging to Black Creek, located approximately 2.2km to the east of the site.

4.5 Regional Geology

Reference to the 1:250,000 Singleton Regional Geology Sheet (S56-1, 1969) indicates that the site is underlain by the Rutherford Formation of the Dalwood Group which is characterised by mudstone, conglomeratic sandstone, sandstone and shale rock types.

4.6 Hydrogeology

Groundwater beneath the site is anticipated be present in unconfined or semi-confined aquifers in residual soils or weathered rock greater than 5m below ground surface (bgs). Groundwater flow direction from beneath the site is anticipated to follow the surface topography and flow to the east and eventually discharge to Black Creek, located approximately 2.2km to the east of the site. It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

A search of the NSW Department of Primary Industries (Office of Water) registered groundwater bores located within a 500m radius of the site was undertaken. The search revealed that there was one registered bore within this radius. A copy of the search is provided in Appendix D and summaries below in Table 4.6.

Table 4.6 – Summary of Groundwater Bore Data

BORE ID	STATUS	PURPOSE	APPROXIMATE DISTANCE AND GRADIENT FROM SITE	WATER BEARING ZONE (m bgs)
GW200249	Active	Test Bore	500m south west – Cross gradient	16 to 18

4.7 Acid Sulfate Soils

Reference to the Cessnock Acid Sulfate Soil Risk Map (1:25,000 scale, 1997 Edition Two, supplied by the NSW Department of Land and Water Conservation) indicates that the site is located within an area of "no known occurrence" of Acid Sulfate Soils (ASS).

5.0 Review of Previous Assessments

Qualtest completed a PCA in August 2016 (ref: NEW16P-0119-AB, dated 26 August 2016. It is noted that the site layout changed following the PCA and has been extended approximately

250m to the east. The objective of the PCA was to provide preliminary information on the presence of contamination at the site.

The scope of works included:

- Desk study and limited site history review including assessment of historic aerial photography over the past 50 years;
- A site walkover to assess the site surface for potential asbestos containing material (ACM) or other potential areas of concern;
- Collection of environmental soil samples from 26 geotechnical test pit locations;
- Laboratory analysis of selected environmental samples; and
- Preparation of a preliminary contamination report, including a preliminary waste classification of the material and options for onsite re-use and/or disposal.

The limited site history review showed that the site appeared to consist of vacant grass land from 1962 to 1994 when a small number of demountable buildings appear to have been stored in the north and eastern portion of the site. In 2010 land scaring is evident in the north and fill mounds/stockpiles appear to be present in the centre and northern portions of the site. The land scaring and stockpiles appear to coincide with earth/constructions works being carried out on the Correctional Centre to the north east of the site.

During field works a number of demountable buildings (containing potential asbestos containing material (ACM)) were observed to have been placed in the eastern portion of the site and gravel access roads were observed in the vicinity of the demountable buildings and in the northern and eastern portion of the site.

A number of fill mounds/stockpiles (SP1 to SP6) were observed in the eastern portion of the site. The stockpiles were observed to consist of orange/brown Gravelly Sandy CLAY, no odours were observed in the stockpiles at the time of fieldwork. Stockpiles SP1, SP2, SP4 and SP5 were observed to contain foreign materials such as concrete, bricks, timber etc. Fragments of potential ACM were also observed in SP5. The ACM was observed to range from approximately 2cm to 15cm in size and was unweathered in a fair condition. The ACM could not be pulverised by hand pressure.

The laboratory results reported concentrations of zinc above the adopted criteria in stockpile samples SP1, SP2, SP3 and SP5 and concentrations of TRH C34-C40 above the adopted criteria in surface samples collected from TP09 and TP12. Concentrations of TRHC10-C16 and TRH C10-C16 less naphthalene, were also reported above the adopted criteria in surface soils at TP09. Chrysotile and amosite asbestos was detected in ACM fragments collected from SP5 (ASB2, Tile 1) and on the ground surface in the vicinity of SP5(ASB4).

Excluding the hotspot location(TP09), statistical analysis was carried out for concentrations of TRH C34-C40 exceeding the adopted criteria (TP12_0.0-0.1). Based on the statistical analysis concentrations of TRHC34-C40 were reported below the adopted criteria.

Four AECs were identified:

1. Fill mounds/ stockpiles observed in the eastern portion of the site - Potential importation/use of fill of unknown origin and quality;
2. Vicinity of demountable buildings stored in the eastern portion of the site – Use, demolition and storage of structures containing hazardous building materials and use of heavy machinery to move demountable buildings;
3. Centre/northern portion of the site – Scared land and stockpiles observed in historical aerial photographs and in the centre/northern portion of the site; and

4. Oaky Creek located along the western boundary of the site and the unnamed dam located approximately 55m to the south east of the site - Potentially contaminated surface water and sediments in the adjacent Oaky Creek and the unnamed dam.

Based on the site history and laboratory results the site was not considered suitable for the proposed development in its present condition. In order to render the site suitable, the following recommendations were made:

- Further soil assessment should be carried out from the fill mounds/stockpile (SP1 to SP6) (AEC1);
- Further soil assessment should be carried out around TP09 to delineate the known soil contamination both laterally and vertically (AEC 2);
- A Hazardous Materials Assessment (HAZMAT) and asbestos clearance works should be carried out on the demountable buildings and in the vicinity of the demountable buildings stored in the eastern portion of the site. (AEC 2);
- Further soil assessment should be carried out from the two fill mounds observed in the centre and western portion of the site (AEC 3);
- Surface water and sediment samples should be collected from Oaky Creek located along the western boundary of the site and the unnamed dam located approximately 55m to the south east of the site (AEC 4);
- Based on the results of the additional assessment a Remediation Action Plan (RAP) should be prepared in accordance with NSW EPA 2011 Consultants Reporting on Contaminated Sites; and
- Following assessment and remediation, a validation report should be prepared by an experienced land contamination consultant.

6.0 Field Investigations

6.1 Site Observations

A site walkover was carried out on 24 August 2016 and soil sampling was undertaken on 24 and 25 August 2016 by an experienced Qualtest Environmental Scientist. The sampling locations are shown on Figure 2. Photographs taken during the works are attached in Appendix E and the test pit logs are attached in Appendix F.

The site observations noted during the field works are summarised below:

- The majority of the site was observed to be maintained grass lands with scattered mature trees and shrubs (photographs 1and 2);
- A number of demountable buildings were observed to have been placed in the centre and eastern portion of the site. The demountable buildings were observed to have been placed on bricks and constructed with a steel frame, aluminium cladding with potential ACM/fibre bored eves. It is noted that the eves ranged from good to poor condition and potential ACM fragments were observed on the site surface beneath the eves and demountable buildings (photographs 3 and 4);
- Gravel access roads were observed in the vicinity of the demountable buildings and in the northern and eastern portion of the site (Photograph 3).
- Heavy machinery (trucks and cranes) were observed removing demountable buildings in the eastern portion of the site;
- A number of fill mounds/stockpiles were observed in the centre and eastern portions of the site:

- Stockpile 1 (SP1) – observed in the central north of the site. SP1 was observed to be approximately 1,551m^3 in size and consist of orange/brown Gravelly Sandy CLAY. Concrete, bricks, asphalt, plastic, timber and terracotta pipe were observed in the stockpile. No odours were noted at the time of fieldwork. Trees and shrubs were observed to be growing in SP1 (photographs 5);
- Stockpile 2 (SP2) – observed to the south of SP1. SP2 was observed to be approximately 640m^3 in size and consist of orange/brown Gravelly Sandy CLAY. Small amounts of asphalt and timber were observed in the stockpile. No odours were noted at the time of fieldwork. Trees and shrubs were observed to be growing in SP2 (photographs 6);
- Stockpile 3 (SP3) – observed to the south of SP2. SP3 was observed to be approximately 740m^3 in size and consist of orange/brown Gravelly Sandy CLAY. No odours noted at the time of fieldwork, and no foreign materials were observed. Trees and shrubs were observed to be growing in SP3 (photographs 7);
- Stockpile 4 (SP4) – observed to the south of SP3. SP4 was observed to be approximately 770m^3 in size and consist of orange/brown Gravelly Sandy CLAY. An empty waste oil drum, tree stumps and green waste were observed in the stockpile. No odours were noted at the time of fieldwork. Trees and shrubs were also observed to be growing in SP4 (photographs 8);
- Stockpile 5 (SP5) – observed to the south of SP4. SP5 was observed to be approximately 2,375m^3 in size and consist of orange/brown Gravelly Sandy CLAY. Asphalt, concrete, plastic, timber and potential ACM were observed in the southern portion of the stockpile. The ACM was observed to range from approximately 2cm to 5cm in size and was non-weathered in a fair condition. The ACM could not be pulverised by hand pressure. No odours were noted at the time of fieldwork. Trees and shrubs were observed to be growing in SP5. Fragments of potential ACM and lead paint were also observed on the ground surface to the south of SP5 (photographs 9 and 10);
- Stockpile 6 (SP6) – observed in the central south of the site. SP6 was observed to be approximately 1,815m^3 in size and consist of orange/brown Gravelly Sandy CLAY. SP6 was covered in grass and no odours or foreign materials were observed in SP6. Trees and shrubs were observed to be growing in SP6. It is noted that SP6 forms part of a larger soil mound/berm that was observed offsite along the southern boundary of the site (Photographs 11).
- Stockpile 8 (SP8) – observed to the east of SP2 in the centre/eastern portion of the site. SP8 was observed to be approximately 400m^3 in size and consist of orange/brown Gravelly Sandy CLAY. SP8 was covered in grass and trees and no odours or foreign materials were observed. Steel and equipment was observed stored on SP8 (Photographs 12).
- Stockpile 9 (SP9) – observed to the east of SP8 in the eastern portion of the site. SP9 was observed to consist of a mound covered in grass and an area of fill placed beneath a gravel roadway. SP9 was observed to be approximately 1,700m^3 in size and consist of orange/brown Gravelly Sandy CLAY. The mound and material beneath the roadway was observed to be consistent. No odours or foreign materials were observed in SP9 (Photographs 13).
- Stockpile 10 (SP10) – observed in the south eastern portion of the site. SP10 was observed to be approximately 800m^3 in size and consist of orange/brown Gravelly Sandy CLAY. Building rubble including asphalt, concrete, plastic and timber was observed in SP10 (Photographs 14).

- A smaller mound of fill (SP7) was observed in the western portion of the site. SP7 was observed to be approximately 15m^3. SP7 was grassed and no odours or foreign materials were observed (Photograph 15);

- A small area of fill, approximately 10m X 7m (70m^2) was observed on the ground surface in the centre of the site. Foreign materials such as bricks, plastic, silt fencing etc. were observed in the fill. The depth of this fill was observed to be approximately 0.2m thick (Photograph 16); and
- A small drainage line approximately 30m in length and 0.8m wide was observed in the south eastern corner of the site. The gully was observed to drain towards the unnamed dame located approximately 20m to the south east of the site. Fragments of asphalt were observed to have been placed in the gully (Photograph 17).

6.2 Soil and Surface Water Sampling

Samples were collected from the following locations:

- Three surface soil sample locations (SS1 to SS3) - collected from a gravel driveway (SS1) in the eastern portion of the site and an onsite drainage line (draining towards the unnamed dam located approximately 20m to the south east of the site) containing fragments of asphalt (SS2 and SS3);
- Seven test pit locations (TP27 to TP33) at depths between 0.0 and 0.3m bgs;
- 50 stockpile samples (SP1-1 to SP1-6, SP2-1 to SP2-3, SP3-1 to SP3-4, SP4-1 to SP4-3, SP5-1 to SP5-10, SP6-3 to SP6-7, SP7-1 to SP7-2, SP8-1 to SP8-5, SP9-1 to SP9-6, SP10-1 to SP10-7) - collected from the fill mound/stockpiles observed on the site. Two samples of potential ACM (SP1-6 Frag and SP5-4 Frag) were collected from stockpile SP1 and southern portion of SP5 (respectively). The fragments were collected and sent to the laboratory to confirm the presence of asbestos. The ACM was observed to be approximately 2cm to 5cm in size and was non-weathered in a fair condition. The ACM could not be pulverised by hand pressure. A paint sample (Paint 1) observed on the ground surface to the south of SP5 was also collected and analyse for lead. Two samples of asphalt material observed in the southern portion of SP5 (SP5-Asph) and SP10 (SP10-Asph) were also collected and analysed for coal tar; and
- Two surface water and two sediment samples – collected from the unnamed dam (WS1/Sed1) and Oaky Creek (WS2/Sed2)

Soil samples were collected directly from the excavator bucket and a clean pair of disposable gloves was used whilst handling each new sample. The soil samples were placed into 250mL laboratory supplied glass jars and the potential ACM fragments were double bagged in plastic zip-lock bags for laboratory analysis Sediment and surface water samples were collected directly into laboratory supplied jars and bottles. Each sample was placed directly into an ice-chilled esky and remained chilled during transportation to the laboratory.

For samples being assessed for asbestos (SP1-1 to SP1-6, SP2-1 to SP2-3, SP3-1 to SP3-4, SP4-1 to SP4-3, SP5-1 to SP5-10, SP6-3 to SP6-7, SP7-1 to SP7-2, SP8-1 to SP8-5, SP9-1 to SP9-6, SP10-1 to SP10-7), the following procedures were carried out in accordance with the WA Guidelines (2009):

- A 10L sample was collected in a bucket;
- The 10L sample was weighed and passed through a ≤7mm sieve;
- If potential bonded asbestos containing materials (ACM) were captured on the sieve, these were then weighed in relation to the weight of the 10L sample; and
- A 500mL wetted sample was collected from the material that passed through the sieve. The sample was collected into a plastic bag which was secured, and then placed into a secure satchel for transport.

It is noted that no fragments of ACM were observed during sampling in the stockpiles (SP2 to SP4 and SP6 to SP10). The 500ml wetted samples from these stockplies was therefore not analysed for asbestos fines. As fragments of potential ACM were observed in SP1 and SP5, asbestos fines were analysed from SP1 and SP5 only.

7.0 Laboratory analysis

The samples were dispatched to the NATA-accredited Eurofins MGT laboratory in Oakleigh, VIC under chain of custody conditions.

The soil and sediment samples were analysed for the following:

- Total Recoverable Hydrocarbons (TRH) – 63 primary soil samples;
- Benzene, Toluene, Ethylbenzene and Xylene (BTEX) – 63 primary soil samples;
- Polycyclic Aromatic Hydrocarbons (PAHs) – 63 primary soil samples;
- Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) – 63 primary soil samples;
- Organochlorine Pesticides (OCP) – 1 primary soil sample;
- pH – 1 primary soil sample;
- Cation Exchange Capacity (CEC) – 1 primary sample;
- Asbestos (ID) – 2 primary samples (fragments);
- Asbestos (W/W) – 16 primary samples (fibres in soil); and
- Leachability - Toxicity characteristic leaching (TCLP) – 8 primary samples;

The two surface water samples were analysed for the following:

- Total recoverable hydrocarbons (TRH);
- Benzene, toluene, ethylbenzene and xylene (BTEX);
- Polycyclic aromatic hydrocarbons (PAHs);
- Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
- Oil and grease; and
- Salinity.

8.0 Investigation Criteria

8.1 Health and Ecological Levels (Soil)

The health and ecological investigation levels for soil, presented in the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013*, Canberra (referred to as NEPM 2013) are generally used in NSW when selecting investigation levels for chemical contaminants in soil.

The purpose of the NEPM (2013) is to *'establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, landowners, developers and industry'.*

NEPM (2013) provides health and ecological investigation and screening levels for different exposure scenarios based on a proposed land use. Health and ecological investigation and screening levels are applicable to the first stage (Tier 1) of site assessment and are used to assist in the iterative development of a Conceptual Site Model (CSM). They are adopted as concentrations of a contaminant above which either further appropriate investigation and/or evaluation will be required, or development of an appropriate management strategy (including remediation).

Health Investigation Levels (HILs) and Health Screening levels (HSLs) are applicable for assessing human health risk via relevant exposure pathways.

The HILs were developed for a broad range of metals and organic substances. These are generic to all soil types.

The HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via inhalation and direct contact with soil and groundwater. The HSLs depend on specific soil physicochemical properties, building configurations, land use scenarios and the depth that groundwater is encountered.

Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) are applicable for assessing risk to terrestrial ecosystems under residential, open space and commercial/industrial land use scenarios. They apply to the top 2m of soil, which corresponds to the root zone and habitation zone of many species.

The EILs are associated with selected metals and organic compounds. The EILs are site specific and are determined by calculating an Ambient Background Concentration (ABC) and an Added Contaminant Limit (ACL) for the site, which are added together to get the EIL. In the absence of ambient background concentration data, a generic ACL, based on the soils pH, Cation Exchange Capacity (CEC) and clay content, has been adopted.

The ESLs are associated with petroleum compounds and fractions and are dependent on specific soil physical properties (i.e. coarse and fine-grained soil).

8.2 Asbestos Materials in Soil

The assessment of known and suspected asbestos contamination in soil is based on:

- *National Environment Protection (Assessment of Site Contamination) Measure 1999* (April 2013), NEPC 2013, Canberra; and
- *WA DoH 2009 Guidelines of the assessment and management of asbestos contaminated sites in Western Australia, WA Department of Health and Department of Environment and Conservation.*

Schedule B1, Section 4 NEPM (2013) provides guidance on the assessment of both friable and non-friable forms of asbestos in soil. This guidance is based on the WA DoH (2009) Guidelines that presented risk based screening levels for asbestos in soil under various landuse scenarios.

For the purpose of assessing asbestos impacts in soil, three groups are recognised:

- *Asbestos Containing Material (ACM)* - which is in sound condition although possibly broken or fragmented and the asbestos is bound in a matrix. This is restricted to material that cannot pass through a 7mm x 7mm sieve;
- *Fibrous asbestos (FA)* - friable asbestos material, such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products;
- *Asbestos fines (AF)* - includes free fibres of asbestos, small fibre bundles and also ACM fragments that pass through a 7mm x 7mm sieve.

The adopted health screening levels for asbestos in soil under various landuse scenarios, are shown in Table 8.2, below.

Table 8.2 Health Screening Levels for Asbestos Contamination in Soil (NEPM 2013)

Form of Asbestos	Health Screening Level			
	Residential A (HIL A)	Residential B (HIL B)	Recreational (HIL C)	Commercial/Industrial (HIL D)
Bonded ACM (%)	0.01	0.04	0.02	0.05
FA and AF (%)	0.001			
All forms of Asbestos	No visible evidence for surface soil (top 10cm)			

The calculation used to determine the %weight of ACM fragments in soil has been derived from the WA DoH (2009) Guidelines and enHealth, 2005, *Management of asbestos in the non-occupational environment* (enHealth,2005). The quantity of asbestos in soil is estimated as follows:

$$\%w/w \text{ asbestos in soil} = \frac{\%\text{ asbestos content x bonded ACM (kg}}{\text{Soil volume (L) x Soil density (kg/L)}}$$

It is assumed that % asbestos content (within bonded ACM) = 15% and soil density (for a sandy clay, based on CBR results for the site) = 2.0 kg/L.

8.3 Surface water investigation levels

For assessing surface water quality, it is first necessary to assess the beneficial uses of surface water for the site and down gradient of the investigation area being assessed. Potential beneficial uses are considered to include:

- Aquatic ecosystems - discharge to surface water bodies with the nearest water bodies being the Oaky Creek dam (located along the western boundary of the site) and the unnamed dam (located 20m to the south east of the site). The surface water bodies sustain freshwater ecosystems; and
- Irrigation - Use of water in the dams to irrigate the site.

Extraction of the surface water around the site for drinking water and stock watering is considered unlikely, due to the presence of reticulated water in the area, and the current site use (no stock present on the site).

Given the above, the potential beneficial use of surface water is considered to be sustaining aquatic ecosystems in the unnamed lagoons and irrigation use.

The applicable guidelines are:

- ANZECC (2000) Australian and New Zealand Guidelines on Fresh and Marine Water Quality; and
- National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) (NEPM, 2013).

The trigger values for freshwater species presented in the ANZECC (2000) (and NEPM, 2013) are considered applicable for the protection of aquatic ecosystems of the receiving waters as the unnamed lagoon and the onsite dams are freshwater bodies.

NEPM (2013) has adopted the trigger values for the protection of 95% of aquatic ecosystems, except where contaminants are potentially bio-accumulative in which case the trigger values for protection of 99% of species are used.

ANZECC (2000) presents long-term values (LTV) and short-term values (STV) for water used for irrigation purposes. The LTV is the maximum concentration of contaminants in irrigation water which can be tolerated assuming 100 years of irrigation while the STV is the maximum concentration of contaminant in the irrigation water that can be tolerated for a shorter period of time assuming 20 years of irrigation. The long term values have been adopted for the purpose of this investigation.

8.4 Adopted Investigation Levels

Based on the proposed site use the adopted investigation levels for residential land use have been adopted.

The adopted investigation levels (for residential land use) are listed in Table 8.4, below.

Table 8.4: Adopted Investigation Levels for Human Health and Environment

COC	Human Health Investigation Levels (mg/kg)[1]	Human Health Screening Levels – 0.0m to <1.0m[2] (mg/kg)	Ecological Investigation and Screening Levels (Residential)[3] (mg/kg)	ANZECC (2000) Fresh[4] (µg/L)	Irrigation[5] (µg/L)
Arsenic	100	-	100	24	100
Cadmium	20	-		0.2	10
Chromium	-	-	400**	1.0	100
Copper	6000	-	280*	1.4	200
Lead	300	-	1100	3.4	2000
Nickel	40	-	30*	11	200
Mercury	400	-	-	0.6	-
Zinc	7400	-	230*	8	2000
Naphthalene	-	5	170	16	-
TRH C6-C10 less BTEX (F1)	-	45	180	-	-
TRH >C10-C16 less Naphthalene (F2)	-	110	-	-	-
TRH C6 - C10	-	-	-	-	-
TPH >C10 - C16	-	-	120	-	-
TRH >C16 - C34	-	-	300	-	-
TRH >C34 - C40	-	-	2800	-	-

COC	Human Health Investigation Levels (mg/kg)[1]	Human Health Screening Levels – 0.0m to <1.0m[2] (mg/kg)	Ecological Investigation and Screening Levels (Residential)[3] (mg/kg)	ANZECC (2000) Fresh[4] (µg/L)	Irrigation[5] (µg/L)
Benzene	-	0.5	50	950	-
Toluene	-	160	85	105**	-
Ethylbenzene	-	55	70	80**	-
Total Xylene	-	110	105	75**	-
Benzo(a) pyrene	-	-	0.7	0.1**	-
Carcinogenic PAH as Benzo(a)pyrene TEQ	40	-	-	-	-
Total PAHs	300	-	-	-	-
Chlordane	50	-	-	0.08	-
Endrin	10	-	-	0.02	-
Heptachlor	6	-	-	0.09	-
Hexachlorobenzene	10	-	-	-	-
Methoxychlor	300	-	-		-
Toxaphene	20	-	-	0.2	-
AF and FA Asbestos	0.001 %	-	-	-	-
ACM	0.01%	-	-	-	-

Notes:

** Based on an average pH of 6.5, a CEC of 9 meq/100g and clay content of >10%.*

1 - NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Table 1A(1): Health Investigation Levels- HILA

2 - NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential, 0m to <1m

3 - NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Ecological Investigation and Screening Levels

4 - ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Table 3.4.1

5 - ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Section 4.2

8.5 Preliminary Waste Classification

In order to provide a preliminary waste classification for the soils across the site, the laboratory results were compared to the Contaminant Threshold (CT) and Specific Contaminant

Concentration (SCC) values for General and Restricted Solid Waste in the NSW EPA (2014) *Waste Classification Guidelines*.

The adopted waste classification criteria are presented in the attached Table 4.

9.0 Quality Assurance/Quality Control

Sampling activities were undertaken in accordance with normal, industry accepted practices and standards. In order to assess field QA / QC procedures the following QA/QC samples were collected during the soil sampling programme:

- 4 X intra lab duplicate samples – QC8 duplicate SP5-1, QC10 duplicate of SP2-3, QC12 duplicate of SP9-1 and QC14 duplicate of SP10-1;
- 4 X inter lab duplicate samples – QC9 duplicate SP5-1, QC11 duplicate of SP2-3, QC13 duplicate of SP9-1 and QC15 duplicate of SP10-1; and
- 1 X trip blank sample.

Primary and intra lab duplicate samples were analysed by the NATA-accredited Eurofins-MGT laboratory in Oakleigh, VIC. Inter lab duplicate samples were analysed by the NATA-accredited Australian Laboratory Service (ALS) laboratory in Springvale, VIC.

Table 6 presents the relative percentage differences (RPDs) between the primary and duplicate samples and the results of the trip blank sample. A review of the Qualtest QA / QC results indicates that RPDs were within the acceptable range with the exception of zinc in SP9-1 and duplicate pairs QC12 (50.8%) and lead (72.7%)and arsenic (52.2%) in SP9-1 duplicate pair QC13. The RPD exceedence is likely attributed to the distribution of the contaminants within the fill material and not considered to affect the usability of the results. It is noted that the RPDs have only been considered where a concentration is greater than 10 times the laboratory limit of reporting (LOR) as small concentrations exaggerate the percentage differences.

Results of the trip blank samples were below detection limits.

The laboratory internal QA/QC reports indicated that the appropriate laboratory QA / QC procedures and rates were undertaken for contamination studies, and that:

- Laboratory blank samples were free of contamination;
- Matrix spike recoveries were within the control limits;
- Laboratory duplicate RPDs were recorded within the control limits; and
- Surrogates and laboratory control samples were within the acceptable range of 70% to 130%.

Based on the above it is considered that the field and laboratory methods for soil sampling are appropriate and that the data obtained is usable and considered to reasonably represent the concentrations at the sampling points at the time of sampling.

10.0 Results

10.1 Subsurface Conditions

The soils observed during test pitting are summarised below in Table 10.1.

Table 10.1 – Summary of Geotechnical Units and Soil Types

Unit	Soil Type	Description	Depth Range (m bgs)
1	FILL	Variable materials at different test pit locations including Sandy CLAY and Sandy Clayey GRAVEL – medium to high plasticity, dark grey-brown, fine to medium grained gravel in places, fine to medium grained sand, root affected in places.	0.0 to 0.10 – 0.45 (TP01, TP06, TP08, TP30, TP31and TP32 only)
2	TOPSOIL	Clayey SAND - low plasticity, dark grey-brown, fine to medium grained sand, trace fine to coarse grained gravel, sub-angular, trace silt, root affected.	0.0 to 0.1 – 0.3
3	SLOPEWASH	Clayey SAND and Silty SAND / Sandy SILT – fine to medium grained, dark brown to grey-brown, fines of low plasticity, trace silt, trace rootlets in places. SAND – fine to medium grained, grey-brown, trace silt.	0.0 – 0.2 to 0.2 – 0.6
4	RESIDUAL SOIL	CLAY / Sandy CLAY / Clayey SAND – mostly medium and medium to high plasticity, varying colour combinations of orange-brown with some grey / dark grey and/or red-brown, fine grained sand. Mostly very stiff to hard consistency.	0.15 – 0.6 to 0.3 – 2.4
5	EXTREMELY WEATHERED (XW) ROCK (with soil properties)	Extremely weathered SANDSTONE with soil properties, breaks down into Gravelly Clayey SAND / Clayey SAND – fine grained, mostly grey with some orange, fine to medium grained gravel in places.	0.8 – 1.7 to 1.05 – 2.6
6	HIGHLY WEATHERED (HW) ROCK	SANDSTONE – fine grained, varying in colour combinations of dark grey-black, orange-brown to brown and grey, estimated strength ranging from very low to high. Generally fractured or semi-fractured. Extremely to highly weathered / extremely weathered layers in places.	0.75 – 2.1 to 0.8 – EOH*

* End of hole

No odours or staining or anthropogenic material was observed during test pitting. Fragments of potential ACM material were identified on the site surface, in the vicinity of the demountable buildings and within fill mounds/stockpile (SP1 and SP5) and on the site surface in the vicinity of SP5 in the eastern portion of the site.

For further information regarding the subsurface conditions observed on the site refer to the geotechnical report carried out in conjunction with this PCA (ref: NEW16P-0119AD, dated 12 September 2016).

10.2 PID Results

The soil samples were screened with a Photoionisation Detector (PID) to assess the potential for volatile compounds to be present.

The PID results are included on PID screening sheet included in Appendix F. The PID results ranged from 0.0ppm to 3.1ppm, which indicates a low potential for volatile compounds to be present within the samples.

10.3 Laboratory Results

Soil analytical results are summarised in Table 1to Table 5, Appendix B. The laboratory analytical reports are also included in Appendix G. It is noted that laboratory results from the PCA have also been included in Table 1 to Table 5, Appendix B and in the summary provided below.

Soil Analytical Results

The soil laboratory results were compared to the investigation levels described in Section 8.0. The analytical results indicated that concentrations of contaminants were reported below the adopted criteria, with the exception of:

- Zinc reported above the adopted EIL criteria of 230mg/kg in stockpile samples SP1 (440mg/kg), SP1-4 (450mg/kg), SP1-5 (560mg/kg), SP2 (1200mg/kg), SP2-1 (610mg/kg), SP3 (450mg/kg), SP3-3 (410mg/kg), SP3-4 (530mg/kg), SP4-3 (620mg/kg), SP5 (270mg/kg), SP5-4 (300mg/kg), SP9-1 (220mg/kg), SP9-2 (1000mg/kg), SP9-3 (350mg/kg), SP9-4 (520mg/kg), SP9-5 (950mg/kg) and SP9-6 (1600mg/kg);
- Nickel reported above the adopted EIL criteria of 30mg/kg in stockpile samples SP5-9 (36mg/kg), SP10-5 (38mg/kg) and SP10-6 (34mg/kg);
- Benzo(a)pyrene reported above the adopted ESL criteria of 0.7mg/kg in stockpile samples SP10-5 (20mg/kg) and SP10-6 (5.1mg/kg) and surface samples SS2 (14mg/kg) and SS3 (1.7mg/kg);
- Benzo(a)pyrene TEQ reported above the adopted HIL criteria of 3mg/kg in stockpile samples SP10-5 (33mg/kg) and SP10-6 (8.6mg/kg) and surface samples SS2 (22mg/kg) and SS3 (3.1mg/kg);
- TRHC16-C34 reported above the adopted ESL criteria of 300mg/kg) in stockpile samples SP10-5 (640mg/kg), test pit samples TP9_0.0-0.1 (4600mg/kg) and TP12_0.0-0.1 (370mg/kg) and surface sample SS2 (460mg/kg);
- TRHC10-C16 reported above the adopted EIL criteria of 120mg/kg) in test pit sample TP09_0.0-0.1 (3,700mg/kg);
- TRHC10-C16 less naphthalene (F2) reported above the adopted HIL criteria of 110mg/kg in test pit sample TP09_0.0-0.1 (3,700mg/kg);
- Chrysotile and amosite asbestos was detected in ACM fragments collected from SP1 (SP1-6), southern portion of SP5 (ASB2, Tile 1, SP5-4) and on the ground surface to the south of SP5(ASB4). An asbestos assessment was carried out in accordance with the WA DoH 2009 Guidelines for material stockpiled in SP1 and SP5. Based on the assessment concentrations of asbestos fragments were reported below the adopted investigation level. No Asbestos Fines (AF) were identified in SP1 or SP5;
- Coal tar was reported in asphalt samples collected from the southern portion of SP5 and SP10; and
- Leachability (TCLP) results reported concentrations of zinc above the laboratory LOR of 0.01mg/L in soil samples SP1 (0.44mg/L), SP2 (1.6mg/L) and SP3 (0.09mg/L).

95% Upper Confidence Limit Calculations

For concentrations of contaminants exceeding the adopted investigation levels the 95% Upper Confidence Limits (UCLs) of the average concentrations for the test pit soil sample results were calculated using ProUCL in accordance with the procedures discussed in NEPM (2013) Schedule B2 Section 13 and NSW EPA (1995) Sampling Design Guidelines.

NEPM (2013) Schedule B1, Section 3.2.1 states that:

- "At the very least, the maximum and 95%UCL of the arithmetic mean contaminant concentration should be compared to the relevant Tier 1 screening criteria"
- "The implications of localised elevated values (hotspots) should also be considered. The results should also meet the following criteria:
    - The standard deviation of the results should be less than 50% of the relevant investigation or screening level, and
    - No single value should exceed 250% of the relevant investigation or screening level."

Calculation sheets for data statistics, including average, standard deviation and 95%UCL of the average, are attached in Appendix G. ProUCL calculates the UCL comparing a number of different methods, including normal distribution, lognormal distribution, gamma distribution and nonparametric. ProUCL then recommends an appropriate method for the data set.

Based on the above the following hotspots (value exceeds 250% of the investigation criteria) have been identified and not included in the ProUCL calculation:

- Benzo(a) pyrene and Benzo(a)pyrene TEQ in SP10 and SS2 and SS3
- TRH C10-C16 less naphthalene (F2), TRHC10-C16 and TRH C16-C34 at TP09; and
- Zinc in SP2 and SP9.

The UCL calculations for the test pit soil sample results indicated that:

- The 95% UCL for zinc in SP1was 415.4mg/kg**, above** the EIL of 230mg/kg;
- The 95% UCL for zinc in SP3 was 518.1mg/kg, **above** the EIL of 230mg/kg;
- The 95% UCL for zinc in SP4 was 524.7mg/kg, **above** the EIL of 230mg/kg;
- The 95% UCL for zinc in SP5 was 185.8mg/kg, below the EIL of 230mg/kg;
- The 95% UCL for nickel in SP5 was 15.39mg/kg, below the EIL of 30mg/kg;
- The 95% UCL for nickel in SP10 was 27.5mg/kg, below the EIL of 30mg/kg;
- The 95% UCL for TRHC16-C34 for SP10 was 382.1mg/kg, **above** the ESL of 300mg/kg; and
- The 95% UCL for TRHC16-C34 for test pit and surface samples (not including hotspot location TP09) was 134mg/kg, below the ESL of 300mg/kg.

Silica gel clean up

In order to differentiate petroleum hydrocarbons from polar organic compounds (i.e. decomposing plant material), TPH silica gel clean up tests were carried out on soil sample TP09_0.0-0.1 which reported concentrations of TRHC10-C16 less naphthalene (F2), TRHC10-C16, TRHC16-C34 above adopted criteria.

Results from the silica gel clean up tests showed concentrations of TRHC10-C16 less naphthalene (F2), TRHC10-C16, TRHC16-C34 below the laboratory limit of reporting (LOR),

which indicated that the TPH identified at TP09 was probably derived from naturally occurring polar organic sources (decomposing plant material) and not petroleum hydrocarbons.

Surface Water Results

The surface water laboratory results were compared to the investigation levels described in Section 8.0. The analytical results indicated that concentrations of contaminants were reported below the adopted criteria, with the exception of the following metal analytes:

- Concentrations of cadmium were reported above the adopted ANZECC criteria of 0.2µg/L in WS1 (0.3µg/L);
- Concentrations of chromium were reported above the adopted ANZECC criteria of 1µg/L in WS1 (9µg/L);
- Concentrations of copper were reported above the adopted ANZECC criteria of 1.4µg/L in WS1 (6µg/L);
- Concentrations of lead were reported above the adopted ANZECC criteria of 3.4µg/L in WS1(12µg/L); and
- Concentrations of zinc were reported above the adopted ANZECC criteria of 8µg/L in WS1 (1800µg/L) and WS2 (10µg/L).

Preliminary Waste Classification

The waste classification results are summarised in Table 4.

The laboratory results were compared to the investigation levels described in Section 8.0. The analytical results indicated that concentrations of contaminants were recorded below the CT and/or SCC1 values for General Solid Waste (GSW) with the exception of the following areas/stockpiles:

- SP10 reported concentrations of benzo(a)pyrene (SP10-5_20mg/kg) above the adopted GSW SSC1 guideline of 10mg/kg and total PAHs (SP10-5_235.1mg/kg) above the GSW guideline of 200mg/kg; and
- SS2 reported concentrations of benzo(a)pyrene (14mg/kg) above the adopted GSW SSC1 guideline of 10mg/kg;

It is also noted that fragments of ACM were also identified in SP1 and SP5.

According to the procedure outlined in the NSW EPA (2014) Waste Classification Guidelines, the following applies:

- The soils assessed are not classed as a Special Waste;
- The soils assessed are not classed as a Liquid Waste;
- The soils assessed are not classed as a Pre-Classified Waste, however asphalt containing coal tar was observed in SP5, SP10 SS2 and SS3. Asphalt (including asphalt containing coal tar) pre-classifies as GSW; and
- The soils assessed do not possess hazardous characteristics.

Based on the above the following classifications exist for the site soils:

- The majority of the sites topsoil and insitu fill classifies (from a chemical perspective) as General Solid Waste. It is noted that in areas were potential ACM has been observed on the site surface (eastern portion of the site) an asbestos clearance certificate will be required prior to the excavation and removal of topsoil/insitu fill from the site for this classification to apply. If no clearance certificate is provided the material classifies as GSW to be managed as asbestos waste;
- SP1 and SP5 classifies as General Solid Waste, to be managed as asbestos waste; and

- SP10 and SS2 classifies as Restricted Solid Waste.

11.0 Preliminary VENM Assessment

The NSW DECCW (2014) Waste Classification Guidelines define *"Virgin excavated natural material (e.g. clay, gravel, sand, soil and rock) that is not mixed with any other waste and that:*

- *has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities, and*
- *Does not contain sulfidic ores or soils, or any other waste.*

And includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved from time to time by a notice published in the NSW Government Gazette."

The site is located in a semi-rural area of Cessnock, NSW. No potentially contaminated soils were observed in the assessed underlying residual and weathered rock material. It is noted however elevated concentrations of zinc and/or PAHs were reported in the fill mounds on the site and in surface samples SS2 and SS3.

Based on the Acid Sulfate Risk Map for the site (Cessnock) the site is within an area of 'No Known Occurrence' of acid sulfate soils.

On the basis of the above observations, with the exception of material surrounding SS2 and SS3 and beneath the fill mounds, the residual soils below the topsoil and natural weathered rock material (units 4 to 6) beneath the overlying topsoil and fill is preliminary classified as VENM, in accordance with the NSW DECCW (2014) *Waste Classification Guidelines*.

Following the removal and validation of the site surface in the vicinity of the fill mounds and surface samples SS2 and SS3 the residual soils and weathered rock in these areas will also likely classify as VENM.

Photographs of the material assessed to be VENM are shown in photographs 18, 19 and 20, Appendix E.

12.0 Conceptual Site Model

Based on the results of the PCA carried out on the site a conceptual site model (CSM) has been developed.

12.1 Potential Sources of Contamination

Table 12.1 (below) shows the areas of environmental concern (AECs) and associated Chemicals of Concern (COCs) identified for the site.

Table 12.1 – Potential AECs and COCs

AEC	Potentially Contaminating Activity	Potential COCs	Likelihood of Contamination	Sampling Undertaken
1. Fill mounds/ stockpiles observed in the centre and eastern portion of the site	Potential importation/use of fill of unknown origin and quality	Heavy metals, TRH, BTEX, PAH, OCP, asbestos	Medium	Previous PCA - SP1, SP2, SP3, SP4, SP5, SP6-1 SP6-2 Current Investigation – SP1-1 to SP1-6, SP2-1 to SP2-3, SP3-1 to SP3-4, SP4-1 to SP4-3, SP5-1 to SP5-10, SP6-3 to SP6-7, SP7-1 to SP7-2, SP8-1 to SP8-5, SP9-1 to SP9-6, SP10-1 to SP10-7.
2. Vicinity of demountable buildings stored in the eastern portion of the site	Use, demolition and storage of structures containing hazardous building materials and use of heavy machinery to move demountable buildings	Asbestos, Heavy metals, TRH, BTEX, PAH	Medium to High	Previous PCA - ACM1 to ACM4, Tile 1 and SP5. Surface samples from TP02, TP03, TP05, TP06 and TP09 Current Investigation – TP27, TP28, TP29, TP31, TP33
3. Centre/northern portion of the site	Scared land and stockpiles observed in historical aerial photographs and in the centre/northern portion of the site	Heavy metals, TRH, BTEX, PAH, OCP	Low to medium	Previous PCA - TP01, TP02, TP04 SP1, SP2, SP3, SP4, SP5 Current Investigation – SP1-1 to SP1-6, SP2-1 to SP2-3, SP3-1 to SP3-4, SP4-1 to SP4-3, SP5-1 to SP5-
4. Oaky Creek and the unnamed dam including drainage line	Potentially contaminated surface water and sediments in the adjacent Oaky Creek and the unnamed dam	Heavy metals, TRH, BTEX, PAH, OCP	Low	Current Investigation – WS1 and Sed1 (unnamed Dam) and WS2 and Sed2 (Oaky Creek) and surface samples SS2 and SS3 from drainage line

12.2 Potentially Affected Media, Receptors and Exposure Pathways

Table 12.2 summarises the potentially affected media, potential receptors to contamination, and potential and complete exposure pathways.

Table 12.2 – Summary of Potentially Affected Media, Receptors and Exposure Pathways

Consideration	Information
Potentially affected media	Soil Surface water
Potential transport mechanisms & exposure pathways	Leaching of soil contaminants to surface water Direct dermal contact with contaminated soil and/or surface water Inhalation of dust and asbestos fibres Ingestion of contaminated soil (as dust) and/or surface water Surface water discharge to t Oaky Creek located along the western boundary of the site.
Potential receptors of contamination	***Site occupants & construction/maintenance workers*** Potential exposure via dermal contact with soil and surface water, and ingestion of soil and surface water. The ACM fragments were observed to be non-weathered in a fair condition indicating the risk of air borne fibres is low to negligible. It is also noted that no asbestos fines/fibres were identified in SP1 and SP5 (where fragments of ACM were identified). Contact with groundwater is considered unlikely, taking into account the anticipated depth to groundwater (>5m bgs in a semi confined/confined aquifer), and that groundwater is not currently extracted on site for beneficial use. ***Surface water*** Contaminants could leach from soils into surface water and sediments in Oaky Creek dam, located along the western boundary of the site and the unnamed dam located 20m to the south east of the site. ***Groundwater*** Contaminants could leach from soils into groundwater. This is considered a lower risk as groundwater is expected to be present at depths >5m within a semi confined/confined aquifer. ***Black Creek*** It is considered that groundwater could discharge to Black Creek, located approximately 2.2km to the east of the site. Given the low risk of groundwater to be contaminated as a result of site conditions, the risk of site contamination reaching Black Creek is low.

12.3 Potential and Complete Exposure Pathways

Table 12.3 (below) summarises the potential and complete exposure pathways.

Table 12.3 – Potential and Complete Exposure Pathways

Receptor/Media	Exposure Pathway	Comment
Site occupants and construction/maintenance workers	Complete	There is a potential for site users and workers to be exposed to contaminated soil.
Soil	Complete	There is soil contamination present in the fill mounds/stockpiled material in the center and eastern portion of the site (SP1 to SP4, SP9, SP10) and in the drainage line in the south eastern portion of the site (SS2 and SS3) Low contaminant concentrations were reported across the remainder of the site.
Groundwater users	Likely to be incomplete	Groundwater is anticipated to be at depths >5m and is not considered to be contaminated, meaning a complete exposure pathway probably does not exist.
Surface water ecosystems and users	Potentially Complete	Elevated metals were reported in water samples collected from Oaky Creek dam (located along the western boundary of the site) and the unnamed dam (located 20m to the south east of the site), indicating that excess runoff from the site may be impacting surface water in the Oaky Creek dam and the Unnamed dam. The overflow from Oaky Creek dam appears to flow to the south west towards a series of additional dams. The unnamed dam located to the south east of the site also flows to a series of additional dams before discharging to Black Creek, located approximately 2.2km to the east of the site.

13.0 Discussion

The limited site history review showed that the site appeared to consist of vacant grass land from 1962 to 1994 when a small number of demountable buildings appear to have been stored in the north/north eastern portion of the site. The site appears to remain relatively unchanged until 2007 when a small amount of land scarring is evident in the northern western and north eastern portion of the site. In 2010 land scaring is evident in the north and fill mounds/stockpiles appear to be present in the centre and northern portions of the site. The land scaring and stockpiles appear to coincide with earthworks/constructions works being carried out on the existing Correctional Centre to the north east of the site. Additional demountable buildings also appear to be present in the eastern portion of the site.

During the site walkover the majority of the site was observed to be vacant grass lands with scattered mature trees and shrubs. A number of demountable buildings (containing potential asbestos containing material (ACM)) were observed to have been placed in the northern and eastern portion of the site and gravel access roads were observed in the vicinity of the demountable buildings.

A number of fill mounds/stockpiles (SP1 to SP9) were observed in the centre and eastern portion of the site. The stockpiles were observed to consist of orange/brown Gravelly Sandy CLAY, no odours were observed in the stockpiles at the time of fieldwork. SP1, SP2, SP4 were observed to contain small amounts of foreign materials such as concrete, bricks, timber etc. (approximately 1%). The southern portion of SP5 and SP10 were observed to contain approximately 40% to 50% foreign materials such as concrete, bricks, timber, asphalt etc. Fragments of potential ACM were also observed in SP1 and SP5. The ACM was observed to range from approximately 2cm to 5cm in size and was unweathered in a fair condition. The ACM could not be pulverised by hand pressure.

Contamination Assessment

During this investigation soil samples were collected from three surface sample locations (SS1 to SS3), 7 test pit locations (TP27 to TP33) and 50 stockpile samples were collected from the fill mound/stockpiles observed on the site (SP1-1 to SP1-6, SP2-1 to SP2-3, SP3-1 to SP3-4, SP4-1 to SP4-3, SP5-1 to SP5-10, SP6-3 to SP6-7, SP7-1 to SP7-2, SP8-1 to SP8-5, SP9-1 to SP9-6, SP10-1 to SP10-7).

Two samples of potential ACM (SP1-6 Frag and SP5-4 Frag) were collected from stockpile SP1 and SP5 (respectively). The fragments were collected and sent to the laboratory to confirm the presence of asbestos. The ACM was observed to be approximately 2cm to 5cm in size and was non-weathered in a fair condition. The ACM could not be pulverised by hand pressure.

A paint sample (Paint 1) observed on the ground surface adjacent to SP5 was also collected and analyse for lead. Two samples of asphalt material observed in SP5 (SP5-Asph) and SP10 (SP10-Asph) were also collected and analysed for coal tar. Two surface water and two sediment samples (WS1 and WS2) were collected from the unnamed dam (WS1) Oaky Creek (WS2).

The laboratory results reported concentrations of zinc above the adopted ecological criteria in stockpile samples SP1, SP2, SP3, SP4, SP5 and SP9 and concentrations of nickel above the adopted ecological criteria in SP5 and SP10. Concentrations of benzo(a)pyrene and total PAHs were reported above the adopted ecological and human heal criteria in SP10 and surface samples SS2 and SS3. Concentrations of TRHC16-C34 were also reported above the adopted criteria in TP09, TP12 and SS2 and concentrations of TRHC10-C16 and TRH C10-C16 less naphthalene, were reported above the adopted criteria in surface soils at TP09.

Chrysotile and amosite asbestos was detected in ACM fragments collected from SP1 (SP1-6), SP5 (ASB2, Tile 1, SP5-4) and on the ground surface in the vicinity of SP5(ASB4). An asbestos assessment was carried out in accordance with the WA DoH 2009 Guidelines for material stockpiled in SP1 and SP5. Based on the assessment concentrations of asbestos fragments were reported below the adopted investigation level. No Asbestos Fines (AF) were also identified in SP1 or SP5. Coal tar was reported in asphalt samples collected from SP5 and SP10.

Excluding the hotspot locations, statistical analysis was carried out for concentrations of zinc, nickel and TRHC16-C34 exceeding the adopted criteria. Based on the statistical analysis concentrations of zinc in SP1, SP3 and SP4 remained above the adopted criteria, concentrations of zinc and nickel in SP5 were reported below the adopted criteria, concentrations of nickel were reported below the adopted criteria in SP10. Concentrations of TRHC16-C34 were reported above the adopted criteria in SP10 and below the adopted criteria in test pit and surface samples (not including hotspot location TP09).

Silica gel clean-up was carried out on TP09 which indicated that the TRH identified in TP09 is derived from naturally occurring polar organic sources (decomposing plant material) and not petroleum hydrocarbons.

Ecological guidelines are applicable for assessing risk to terrestrial ecosystems. The proposed landuse is a securely fenced correctional facility with administration buildings, car parking, landscaped gardens and turfed areas. Based on this it is considered unlikely transitory wildlife would come into contact with the site soils and appropriate growing media(topsoil) will be required to be imported for the landscaped and turfed areas. As a precautionary measure it is recommended that material exceeding the ecological guidelines be placed at least 0.5m bgs ensuring they do not come into contact with the root zone in landscaped and turfed areas.

Groundwater beneath the site is expected to be greater than 5m bgs and given the top down mode of contamination and clay sub soil a complete exposure pathway for contamination to enter the groundwater is not considered to exist. Should the proposed development intercept groundwater then an assessment of groundwater quality beneath the site may be required.

Surface water from the site would be expected to infiltrate into site soils, with excess surface water draining to the west towards Oaky Creek, located along the western boundary of the site. Excess surface water from the south eastern corner of the site would likely drain towards an unnamed dam located approximately 20m to the south east of the site.

The surface water results indicated concentrations of cadmium chromium, copper, lead and zinc above the adopted ANZECC criteria in the unamend dam and concentration of zinc above the adopted ANZECC criteria in Oaky Creek dam. Concentrations reported were below the adopted irrigation criteria. It is noted that the dams also capture water from the surrounding catchment, including the surrounding golf course.

Waste Classification

A preliminary VENM assessment was carried out on the residual soils and weathered rock material observed beneath the overlying topsoil and fill material on the site. With the exception of material surrounding SS2 and SS3 and beneath the fill mounds, the residual soils and natural weathered rock material (units 4 to 6) beneath the overlying topsoil and fill is preliminary classified as VENM, in accordance with the NSW DECCW (2014) *Waste Classification Guidelines*. Following the removal and validation of the site surface in the vicinity of the fill mounds and surface samples SS2 and SS3 the residual soils and weathered rock in these areas will also likely classify as VENM.

Should the overlying topsoil and fill material be disposed of offsite, it would need to be classified according to the NSW EPA (2014) Waste Classification Guidelines. From a chemical perspective, the majority of the sites topsoil and insitu fill classifies as General Solid Waste. In areas were potential ACM has been observed on the site surface (eastern portion of the site) an asbestos clearance certificate will be required prior to the excavation and removal of topsoil/insitu fill from the site for this classification to apply. If no clearance certificate is provided the material classifies as GSW to be managed as asbestos waste. SP1 and SP5 classifies as General Solid Waste, to be managed as asbestos waste, and SP10 and SS2 classify as Restricted Solid Waste.

A summary of the identified AECs, laboratory results and need for remediation and/or management is provided in Table 13.0 below.

Table 13.0 – Summary of AECs, Sampling Results and Recommended Remediation/Management.

AECs	Laboratory Results (Following Statistical Analysis and Silica Gel Clean up).	Need for Remediation/management
1. Fill mounds/ stockpiles observed in the eastern portion of the site	Concentrations were reported above the adopted EIL for zinc SP1, SP2, SP3, SP4 and SP9. Concentrations of benzo(a)pyrene, benzo(a)pyrene TEQ and total PAHs were reported above the adopted EILs and HILs in SP10. Chrysotile and amosite asbestos was detected in ACM fragments collected from SP1 and the southern portion of SP5. Concentrations of asbestos fragments were reported below the adopted investigation level. No Asbestos Fines (AF) were identified in SP1 or SP5. Building rubble (40% – 50%) and asphalt containing coal tar was reported in the southern portion of SP5 and SP10.	Yes. SP2 to SP4, SP5, SP9 and SP10 will require remediation and/or management. A Remediation Action Plan (RAP) will be required to be developed by a suitably qualified environmental consultant.
2. Vicinity of demountable buildings stored in the eastern portion of the site	Concentrations were reported below adopted investigation levels however fragments of potential ACM were observed in the area.	A hazardous materials assessment and asbestos clearance works are recommended in the footprint of demountable buildings and in the vicinity of the demountable buildings stored in the eastern portion of the site.
3. Centre/northern portion of the site	Concentrations were reported below adopted investigation levels	No.
4. Oaky Creek located along the western boundary of the site, the unnamed dam located approximately 20m to the south east of the site and drainage line in south eastern corner of the site	Concentrations of cadmium chromium, copper, lead and zinc were reported above the adopted ANZECC criteria in the unamend dam and concentration of zinc above the adopted ANZECC criteria in Oaky Creek dam. Concentrations of benzo(a)pyrene and benzo(a)pyrene TEQ were reported above the adopted EILs and HILs in SS2 and SS3.	Yes. The drainage line (soil surrounding SS2 and SS3) will require remediation and/or management. During construction and earth works the unnamed dam and Oaky Creek will be required to be monitored and managed. A RAP will be required to be developed by a suitably qualified environmental consultant.

14.0 Conclusions and Recommendations

In order for the proposed development to proceed the following items will need to be either remediated and/or managed:

- SP1, SP2, SP3, SP4 and SP9 due to elevated concentrations of zinc exceeding ecological criteria;
- Southern portion of SP5 due to asphalt containing coal tar and SP10 due to asphalt containing coal tar and elevated concentrations of benzo(a)pyrene, benzo(a)pyrene TEQ and total PAHs which were reported above the adopted ecological and/or human health criteria;
- The drainage line (soil surrounding SS2 and SS3) due to elevated concentrations of benzo(a)pyrene, benzo(a)pyrene TEQ exceeding the adopted ecological and human health criteria;
- The fragments of potential ACM observed in the area in the vicinity of the demountable buildings stored in the eastern portion of the site; and
- The observed surface water will need to be monitored and managed during future remediation, construction and earthworks on the site.

It is also noted that fragments of ACM were also identified in SP1 and SP5, below adopted guidelines. However due to the presence of ACM fragments SP1 and SP5 are not to be placed within the top 0.1m of the finished surface level. For ease during onsite soil management it is recommended that material containing ACM fragments (below adopted guidelines) be managed in accordance with stockpiles exceeding ecological criteria.

The following options for remediation and management of the contaminated soils stockpiled in SP1 to SP5, SP9 and SP10 and from the drainage line in the south eastern corner of the site are available:

1. On-site management of SP1 to SP4, northern portion of SP5 and SP9 by placing at depths >0.5m bgs and off-site disposal of the southern portion of SP5, SP10 and the contaminated soils from the drainage line in the south eastern corner of the site. The placed soils should be capped with VENM won from site. or.
2. Remediation by removal and off-site disposal of SP1 to SP5, SP9, SP10 and the contaminated soils from the drainage line in the south eastern corner of the site.

Further details for each remediation option is provided below:

<u>Option 1</u>

On-site management of SP1 to SP4, northern portion of SP5 and SP9 by placing material beneath >0.5m of fill and off-site disposal of the southern portion of SP5, SP10 and the contaminated soils from the drainage line in the south eastern corner of the site. This option includes, but is not limited to the following scope of works:

- Preparation of a Remediation Action Plan (RAP) by a suitably qualified environmental consultant;
- Placement of soils exceeding ecological guidelines beneath at least >0.5m of fill. Ecological guidelines are applicable for assessing risk to terrestrial ecosystems. The proposed landuse is a securely fenced correctional facility with administration buildings, car parking, landscaped gardens and turfed areas. Based on this it is considered unlikely transitory wildlife would come into contact with the site soils and appropriate growing media(topsoil) will be required to be imported for the landscaped and turfed areas. As a precautionary measure material exceeding the ecological criteria is to be placed at least 0.5m bgs ensuring they do not come into contact with the root zone in landscaped and turfed areas. TCLP results showed zinc above the laboratory LOR in

SP1, SP2 and SP3, however due to the low permeability of the residual clay soils and the depth to groundwater a low permeability liner is not considered to be required;

- Excavation and offsite disposal of the southern portion of SP5, SP10 and the contaminated soils from the drainage line in the south eastern corner of the site. The preliminary waste classification for the southern portion of SP5 is General Solid Waste, to be managed as asbestos waste and SP10 and SS2 classify as Restricted Solid Waste. By removing the contaminated soils, the complete exposure pathway that currently exists for site users and construction/maintenance workers and the potential complete pathway for surface water will be removed; and
- Validation sampling following removal of contaminated soil.

Option 2

Remediation by removal and off-site disposal of SP1 to SP4, southern portion of SP5, SP9, SP10 and the contaminated soils from the drainage line in the south eastern corner of the site. This option includes but is not limited to the following scope of works:

- Preparation of a Remediation Action Plan (RAP) by a suitably qualified environmental consultant;
- Excavation and offsite disposal of SP1 to SP5, SP9, SP10 and the contaminated soils from the drainage line in the south eastern corner of the site. The preliminary waste classification for these soils is 'General Solid Waste' with the exception of SP1 and SP5 which classifies as General Solid Waste, to be managed as asbestos waste and SP10 and SS2 which classify as Restricted Solid Waste; and
- Validation sampling following removal of contaminated soil.

By removing the contaminated soils, the complete exposure pathway that currently exists for site users and construction/maintenance workers and the potential complete pathway for surface water will be removed.

Preferred Remedial Strategy

The preferred remedial strategy for this site is Option1 (On-site management of SP1 to SP4, northern portion of SP5 and SP9 by placing at depths >0.5m bgs and off-site disposal of the southern portion of SP5, SP10 and the contaminated soils from the drainage line in the south eastern corner of the site.

The surface water will be managed through the preparation and implementation of a construction environmental management plan (CEMP). The CEMP should include an Unexpected Finds Protocol (UFP) to manage potential ACM uncovered during earthworks. It is noted these documents will be developed and implemented prior to construction and earth works being carried out on the site.

Provided the recommendations made within this report, asbestos clearance works are carried out and a RAP, CEMP and UFP are implemented, it is considered that the site could be rendered suitable, from a contamination point of view, for the proposed development.

14.0 Limitations

The findings presented in the report and used as the basis for recommendations presented herein were obtained using normal, industry accepted practices and standards. To our knowledge, they represent a reasonable interpretation of the general conditions of the site.

Data and opinions contained within the report may not be used in other contexts or for any other purposes without prior review and agreement by Qualtest. If this report is reproduced, it must be in full.

If you have any further questions regarding this report, please do not hesitate to contact the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd.

Libby Betz
Senior Environmental Scientist

APPENDIX A:

Figures

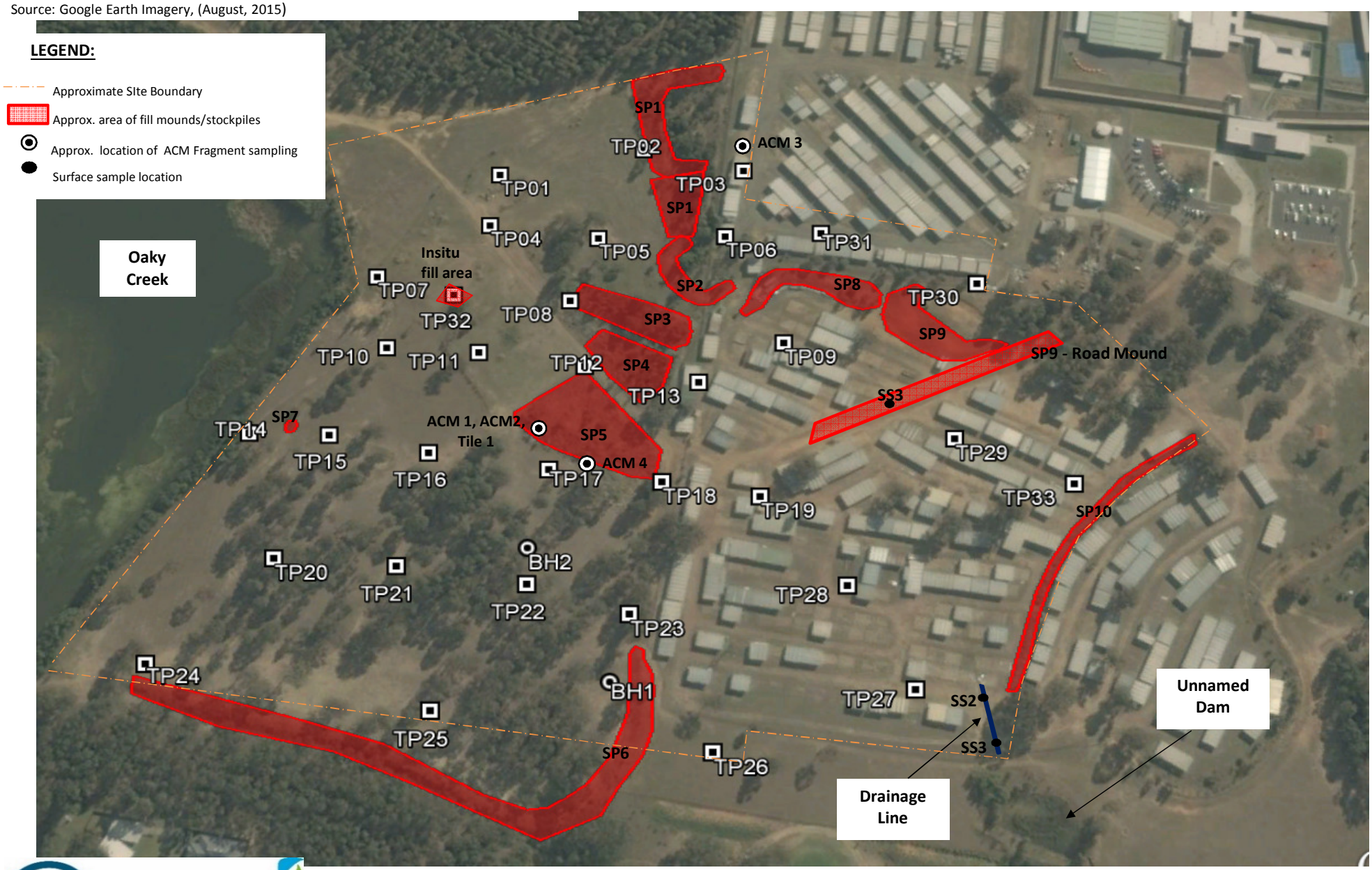
Source: Google Earth Imagery, (August, 2015)

N

Client:	LEND LEASE PTY LTD	Drawing No:	FIGURE 1
Project:	PHASE 2 CONTAMINATION ASSESSMENT	Project No:	NEW16P-0119
Location:	CESSNOCK CORRECTIONAL CENTRE	Scale:	AS SHOWN
Title:	SITE LOCALITY PLAN	Date:	2 SEPTEMBER 2016

Qualtest
LABORATORY (NSW) PTY LTD

Source: Google Earth Imagery, (August, 2015)

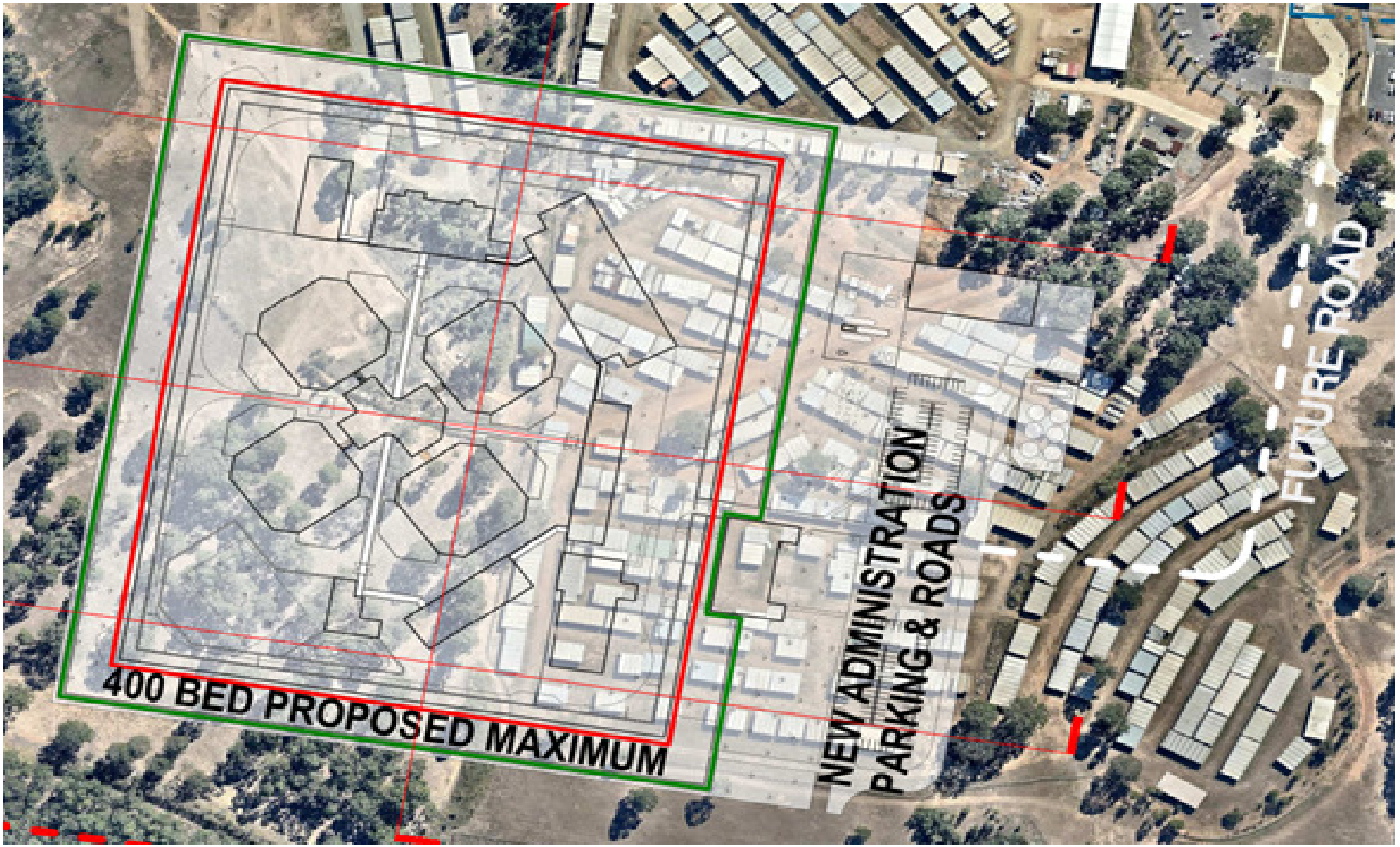


Qualtest LABORATORY (NSW) PTY LTD

Client:	LEND LEASE PTY LTD	Drawing No:	FIGURE 2
Project:	PHASE 2 CONTAMINATION ASSESSMENT	Project No:	NEW16P-0119
Location:	CESSNOCK CORRECTIONAL CENTRE	Scale:	AS SHOWN
Title:	SITE FEATURES	Date:	1 September 2016

Source: Google Earth Imagery, (August, 2015)

N



Qualtest
LABORATORY (NSW) PTY LTD

Client:	LEND LEASE PTY LTD	Drawing No:	FIGURE 3
Project:	PHASE 2 CONTAMINATION ASSESSMENT	Project No:	NEW16P-0119
Location:	CESSNOCK CORRECTIONAL CENTRE	Scale:	AS SHOWN
Title:	PROPOSED DEVELOPMENT PLAN	Date:	2 SEPTEMBER 2016

APPENDIX B:

Tables

Table 1-
Soil Analytical Results - Test PIt, Surface and Sediment Samples
NEW16P-0119

						Field ID	TP01_0.0-0.1	TP02_0.0-0.1	TP03_0.0-0.1	TP03_0.2-0.3	TP04_0.0-0.1	TP05_0.0-0.1	TP06_0.0-0.1	TP06_0.3-0.4	TP07_0.0-0.1	TP08_0.0-0.1	TP09_0.0-0.1	TP10_0.0-0.1	TP11_0.0-0.1	TP12_0.0-0.1	TP13_0.0-0.1	TP14_0.0-0.1	TP15_0.0-0.1	TP16_0.0-0.1
						Date	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016
Analytes		Units	EQL	HIL-A [1]	HSL A&B [2]	EILs/ESLs [3]																		
	pH (1:5 Aqueous extract)	ph units	0.1				7.1	-	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	-	-
	Cation Exchange Capacity	meq/100g	0.05				19	-	-	-	-	-	-	-	-	-	-	-	-	8.6	-	-	-	-
Heavy Metals	Arsenic	mg/kg	2	100		100	8.1	< 2	< 2	17	< 2	9.7	7.6	9.1	< 2	12	3.3	15	5.8	7.8	16	7.4	4	6.3
	Cadmium	mg/kg	0.4	20			0.4	< 0.4	1	0.7	< 0.4	< 0.4	< 0.4	< 0.4	0.6	< 0.4	0.7	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400*	31	24	30	41	40	19	23	18	13	22	17	11	17	16	34	13	9.4	10
	Copper	mg/kg	5	6000		280*	26	11	27	< 5	22	< 5	15	< 5	< 5	12	5.9	< 5	7.3	< 5	< 5	< 5	< 5	< 5
	Lead	mg/kg	5	300		1100	< 5	14	< 5	< 5	< 5	< 5	< 5	12	< 5	36	14	31	9.8	15	11	11	7.7	7.2
	Mercury	mg/kg	5	40			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	400		30*	19	21	22	14	21	< 5	14	< 5	8.1	12	8.8	< 5	13	6.9	6	< 5	< 5	< 5
	Zinc	mg/kg	5	7400		230*	84	51	67	66	52	21	47	28	42	190	51	19	34	34	12	8.8	< 5	5.8
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5			0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	3			0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2				1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5			170	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH	mg/kg	0.5	300			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1		0.5	50	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1		55	70	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	m&p-Xylenes	mg/kg	0.2				< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	o-Xylene	mg/kg	0.1				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1		160	85	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3		40	105	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	8950	< 50	< 50	420	< 50	< 50	< 50	< 50
	TRH C10-C14	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	3300	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	5400	< 50	< 50	180	< 50	< 50	< 50	< 50
	TRH C29-C36	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	250	< 50	< 50	240	< 50	< 50	< 50	< 50
	TRH C6-C9	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50			120	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	3700	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50		110		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	3700	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100			300	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	4600	< 100	< 100	370	< 100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100			2800	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	110	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20		45	180	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH (after silica gel clean-up)	TRH C10-C14 (after silica gel clean-up)	mg/kg	20				-	-	-	-	-	-	-	-	-	-	< 20	-	-	-	-	-	-	-
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-	-	-	-	-	< 50	-	-	-	-	-	-	-
	TRH C15-C28 (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-	-	-	-	-	< 50	-	-	-	-	-	-	-
	TRH C29-C36 (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-	-	-	-	-	< 50	-	-	-	-	-	-	-
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-	-	-	-	-	< 50	-	-	-	-	-	-	-
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100				-	-	-	-	-	-	-	-	-	-	< 100	-	-	-	-	-	-	-
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100				-	-	-	-	-	-	-	-	-	-	< 100	-	-	-	-	-	-	-
OCPs	4.4'-DDD	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	4.4'-DDE	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	4.4'-DDT	mg/kg	0.05			180	-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	DDE, DDT, DDD	mg/kg	0.15	240			-	-	<0.15	-	<0.15	-	-	-	-	-	-	-	-	<0.15	-	-	<0.15	-
	a-BHC	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Aldrin and Dieldrin	mg/kg	0.10	6			-	-	<0.1	-	<0.1	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1	-
	Aldrin	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	b-BHC	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Chlordanes - Total	mg/kg	0.10	50			-	-	< 0.1	-	< 0.1	-	-	-	-	-	-	-	-	< 0.1	-	-	< 0.1	-
	d-BHC	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Dieldrin	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Endosulfan I	mg/kg	0.05	270			-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Endosulfan II	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Endosulfan sulphate	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Endrin	mg/kg	0.05	10			-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Endrin aldehyde	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Endrin ketone	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	g-BHC (Lindane)	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Heptachlor	mg/kg	0.05	6			-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Heptachlor epoxide	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Hexachlorobenzene	mg/kg	0.05				-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Methoxychlor	mg/kg	0.05	300			-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-	< 0.05	-
	Toxaphene	mg/kg	1.00	20			-	-	< 1	-	< 1	-	-	-	-	-	-	-	-	< 1	-	-	< 1	-

Notes
* Based on an average pH of 6.5, a CEC of 9 meq/100g and clay content of >10%.
ND Not detected
NL Not limiting
Result Concentration exceeds adopted human health critieria
Result Concentration exceeds adopted health screening level, vapour intrusion (Residential) -Sand 0-1m
Result Concentration exceeds adopted ecological investigation and screening levels, (residential) - sand 0-1m
1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Table 1A(1): Health Investigation Level
2 NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential, Sand 0m to <1m
3 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Ecological Investigation and Screening Levels

Table 1-
Soil Analytical Results - Test PIt, Surface and Sediment Samples
NEW16P-0119

Analytes		Units	EQL	HIL-A [1]	HSL A&B [2]	EILs/ESLs [3]	Field ID	TP17_0.0-0.1	TP18_0.0-0.1	TP19_0.0-0.1	TP20_0.0-0.1	TP21_0.0-0.1	TP22_0.0-0.1	TP22_0.3-0.6	TP23_0.0-0.1	TP24_0.0-0.1	TP25_0.0-0.1	TP26_0.0-0.1	TP27-0.0-0.1	TP28-0.0-0.1	TP29-0.0-0.1	TP30-0.0-0.1	TP30-0.2-0.3	TP31-0.0-0.1	TP32-0.0-0.1
							Date	10/08/2016	10/08/2016	9/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016
	pH (1:5 Aqueous extract)	ph units	0.1					-	-	-	-	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cation Exchange Capacity	meq/100g	0.05					-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Heavy Metals	Arsenic	mg/kg	2	100		100		7.6	11	18	4.9	6.4	8.4	17	7.9	7.4	13	11	11	11	11	11	26	8.3	6.3
	Cadmium	mg/kg	0.4	20				< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400*		13	24	21	13	14	13	35	19	10	25	12	14	13	16	17	39	27	15
	Copper	mg/kg	5	6000		280*		< 5	< 5	< 5	< 5	< 5	< 5	< 5	7.2	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	32	8.2
	Lead	mg/kg	5	300		1100		13	9.6	6.4	9.2	8.6	8	11	6.9	12	22	9.2	8.5	8.1	8.1	6.1	15	15	11
	Mercury	mg/kg	5	40				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	400		30*		5.4	9.8	11	< 5	< 5	7.2	12	10	< 5	9.3	< 5	< 5	< 5	< 5	5.1	7.9	20	10
	Zinc	mg/kg	5	7400		230*		20	27	61	9.7	6.1	29	37	28	15	35	15	17	20	20	31	38	39	47
PAHs	Acenaphthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5			0.7		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	3				0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2					1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5			170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH	mg/kg	0.5	300				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1		0.5	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1		55	70		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	m&p-Xylenes	mg/kg	0.2					< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	o-Xylene	mg/kg	0.1					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1		160	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3		40	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50					< 50	< 50	< 50	< 50	< 50	168	< 50	195	197	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C10-C14	mg/kg	20					< 20	< 20	< 20	< 20	< 20	29	< 20	26	50	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50					< 50	< 50	< 50	< 50	< 50	87	< 50	110	74	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C29-C36	mg/kg	50					< 50	< 50	< 50	< 50	< 50	52	< 50	59	73	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C6-C9	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50			120		< 50	< 50	< 50	< 50	< 50	< 50	< 50	55	55	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50		110			< 50	< 50	< 50	< 50	< 50	< 50	< 50	55	55	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100			300		< 100	< 100	< 100	< 100	< 100	110	< 100	110	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100			2800		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20		45	180		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH (after silica gel clean-up)	TRH C10-C14 (after silica gel clean-up)	mg/kg	20					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TRH C15-C28 (after silica gel clean-up)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TRH C29-C36 (after silica gel clean-up)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCPs	4.4'-DDD	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05			180		-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDE, DDT, DDD	mg/kg	0.15	240				-	-	-	-	<0.15	-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin and Dieldrin	mg/kg	0.10	6				-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.10	50				-	-	-	-	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.05	270				-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.05	10				-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.05	6				-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.05					-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.05	300				-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Toxaphene	mg/kg	1.00	20				-	-	-	-	< 1	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes
* Based on an average pH of 6.5, a CEC of 9 meq/100g and clay content of >10%.
ND Not detected
NL Not limiting
Result Concentration exceeds adopted human health critieria
Result Concentration exceeds adopted health screening level, vapour intrusion (Residential) -Sand 0-1m
Result Concentration exceeds adopted ecological investigation and screening levels, (residential) - sand 0-1m
1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Table 1A(1): Heal
2 NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential, Sand 0m to <1m
3 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Ecological Investi

Table 1-
Soil Analytical Results - Test PIt, Surface and Sediment Samples
NEW16P-0119

						Field ID	TP33-0.0-0.1	SS1	SS2	SS3	SED 1	SED 2
						Date	25/08/2016	25/08/2016	25/08/2016	25/08/2016	24/08/2016	25/08/2016
Analytes		Units	EQL	HIL-A [1]	HSL A&B [2]	EILs/ESLs [3]						
	pH (1:5 Aqueous extract)	ph units	0.1				7.3	-	-	-	-	-
	Cation Exchange Capacity	meq/100g	0.05				6.9	-	-	-	-	-
Heavy Metals	Arsenic	mg/kg	2	100		100	13	5.5	9.9	5	5.7	2.5
	Cadmium	mg/kg	0.4	20			< 0.4	< 0.4	0.4	< 0.4	< 1	< 1
	Chromium	mg/kg	5	100		400*	18	28	18	11	24	17
	Copper	mg/kg	5	6000		280*	< 5	31	19	< 5	7.4	7.3
	Lead	mg/kg	5	300		1100	13	5.7	24	10	16	11
	Mercury	mg/kg	5	40			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	400		30*	6.8	18	40	< 5	9.9	7.7
	Zinc	mg/kg	5	7400		230*	63	36	200	30	120	50
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	1.7	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	16	2.1	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5			0.7	< 0.5	< 0.5	14	1.7	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5				< 0.5	< 0.5	22	3.1	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	3			0.6	0.6	22	3.1	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2				1.2	1.2	22	3.1	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	16	2.2	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	7.1	1.1	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	12	1.4	< 0.5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	15	2	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	2.3	0.7	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	47	5.6	< 0.5	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	6.6	0.9	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5			170	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	5	0.8	< 0.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	44	5.3	< 0.5	< 0.5
	Total PAH	mg/kg	0.5	300			< 0.5	< 0.5	186.7	23.8	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1		0.5	50	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1		55	70	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	m&p-Xylenes	mg/kg	0.2				< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	o-Xylene	mg/kg	0.1				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1		160	85	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.4
	Xylenes - Total	mg/kg	0.3		40	105	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50				61	< 50	540	260	< 50	< 50
	TRH C10-C14	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50				< 50	< 50	330	110	< 50	< 50
	TRH C29-C36	mg/kg	50				61	< 50	210	150	< 50	< 50
	TRH C6-C9	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50			120	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50		110		< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100			300	< 100	< 100	460	180	< 100	< 100
	TRH >C34-C40	mg/kg	100			2800	< 100	< 100	120	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20		45	180	< 20	< 20	< 20	< 20	< 20	< 20
TRH (after silica gel clean-up)	TRH C10-C14 (after silica gel clean-up)	mg/kg	20				-	-	-	-	-	-
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-
	TRH C15-C28 (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-
	TRH C29-C36 (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50				-	-	-	-	-	-
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100				-	-	-	-	-	-
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100				-	-	-	-	-	-
OCPs	4.4'-DDD	mg/kg	0.05				< 0.05	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05				< 0.05	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05			180	< 0.05	-	-	-	-	-
	DDE, DDT, DDD	mg/kg	0.15	240			<0.15	-	-	-	-	-
	a-BHC	mg/kg	0.05				< 0.05	-	-	-	-	-
	Aldrin and Dieldrin	mg/kg	0.10	6			<0.1	-	-	-	-	-
	Aldrin	mg/kg	0.05				< 0.05	-	-	-	-	-
	b-BHC	mg/kg	0.05				< 0.05	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.10	50			< 0.1	-	-	-	-	-
	d-BHC	mg/kg	0.05				< 0.05	-	-	-	-	-
	Dieldrin	mg/kg	0.05				< 0.05	-	-	-	-	-
	Endosulfan I	mg/kg	0.05	270			< 0.05	-	-	-	-	-
	Endosulfan II	mg/kg	0.05				< 0.05	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05				< 0.05	-	-	-	-	-
	Endrin	mg/kg	0.05	10			< 0.05	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05				< 0.05	-	-	-	-	-
	Endrin ketone	mg/kg	0.05				< 0.05	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.05				< 0.05	-	-	-	-	-
	Heptachlor	mg/kg	0.05	6			< 0.05	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05				< 0.05	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.05				< 0.05	-	-	-	-	-
	Methoxychlor	mg/kg	0.05	300			< 0.05	-	-	-	-	-
	Toxaphene	mg/kg	1.00	20			< 1	-	-	-	-	-

Notes

*	Based on an average pH of 6.5, a CEC of 9 meq/100g and clay content of >10%.
ND	Not detected
NL	Not limiting
Result	Concentration exceeds adopted human health critieria
Result	Concentration exceeds adopted health screening level, vapour intrusion (Residential) -Sand 0-1m
Result	Concentration exceeds adopted ecological investigation and screening levels, (residential) - sand 0-1m

1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Table 1A(1): Heal
2 NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential, Sand 0m to <1m
3 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Ecological Investi

Table 2 -
Soil Analytical Results - Stockpile Samples
NEW16P-0119

Analytes		Units	EQL	HIL-A [1]	HSL A&B [2]	EILs/ESLs [3]	Field ID	SP1	SP1-1	SP1-2	SP1-3	SP1-4	SP1-5	SP1-6	SP2	SP2-1	SP2-2	SP2-3	SP3	SP3-1	SP3-2	SP3-3	SP3-4	SP4	SP4-1	SP4-2	SP4-3	SP5
							Date	10/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	10/08/2016	24/08/2016	24/08/2016	24/08/2016	10/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	10/08/2016	24/08/2016	24/08/2016	24/08/2016	10/08/2016
	Coal Tar	Present	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heavy Metals	Arsenic	mg/kg	2	100		100		16	7.2	17	5.8	26	24	18	29	29	9.3	16	18	13	7.2	30	19	9.3	15	16	17	17
	Cadmium	mg/kg	0.4	20				< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400*		26	10	16	7.9	15	17	22	21	19	12	24	20	10	12	32	25	16	21	19	14	23
	Copper	mg/kg	5	6000		280*		18	< 5	9.4	< 5	24	31	5.7	59	30	< 5	< 5	11	12	< 5	23	21	< 5	5.6	< 5	30	46
	Lead	mg/kg	5	300		1100		29	9.1	64	8.5	54	40	15	100	61	7.8	13	22	21	12	43	99	7.1	14	11	29	15
	Mercury	mg/kg	5	40				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	400		30*		8.5	5.1	< 5	< 5	8.4	9.3	6.2	19	5.3	6.7	6.9	10	< 5	< 5	< 5	8.9	< 5	< 5	< 5	5.8	16
	Zinc	mg/kg	5	7400		230*		440	110	120	27	450	560	66	1200	610	40	44	450	130	21	410	530	28	37	26	620	270
PAHs	Acenaphthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5			0.7		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	3				0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2					1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5			170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH	mg/kg	0.5	300				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1		0.5	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1		55	70		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	m&p-Xylenes	mg/kg	0.2					< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	o-Xylene	mg/kg	0.1					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1		160	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3		40	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50					< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	174	< 50	58	< 50
	TRH C10-C14	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50					< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	74	< 50	< 50	< 50
	TRH C29-C36	mg/kg	50					< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	100	< 50	58	< 50
	TRH C6-C9	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50			120		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50		110			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100			300		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100			2800		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20		45	180		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Notes

* Based on an average pH of 6.5, a CEC of 9 meq/100g and clay content of >10%.

ND Not detected

NL Not limiting

Result Concentration exceeds adopted human health critieria

Result Concentration exceeds adopted health screening level, vapour intrusion (Residential) -Sand 0-1m

Result Concentration exceeds adopted ecological investigation and screening levels, (residential) - sand 0-1m

1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Table 1A(1): Health Investigation Levels

2 NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential, Sand 0m to <1m

3 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Ecological Investigation and Screening Levels

Table 2 -
Soil Analytical Results - Stockpile Samples
NEW16P-0119

Analytes		Units	EQL	HIL-A [1]	HSL A&B [2]	EILs/ESLs [3]	Field ID	SP5-1	SP5-2	SP5-3	SP5-4	SP5-6	SP5-7	SP5-8	SP5-5	SP5-9	SP5-10	SP5-Asph	Paint 1	SP6-1	SP6-2	SP6-3	SP6-4	SP6-5	SP6-7	SP7-1	SP7-2	SP8-1
							Date	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	10/08/2016	10/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	25/08/2016	25/08/2016	25/08/2016
	Coal Tar	Present	-					-	-	-	-	-	-	-	-	-	-	Present	-	-	-	-	-	-	-	-	-	-
Heavy Metals	Arsenic	mg/kg	2	100		100		11	17	12	17	11	12	14	20	8	11	-	-	13	3.4	13	10	9.1	17	9.4	11	14
	Cadmium	mg/kg	0.4	20				0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.6	< 0.4	-	-	0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400*		14	24	21	22	18	14	23	20	28	17	-	-	22	17	18	18	14	19	12	12	20
	Copper	mg/kg	5	6000		280*		< 5	< 5	9.5	25	6	< 5	< 5	< 5	24	8.3	-	-	< 5	7.3	11	< 5	5.3	< 5	< 5	< 5	5.2
	Lead	mg/kg	5	300		1100		12	15	22	36	11	20	15	17	9.8	22	-	<0.01	14	< 5	23	9.9	9.4	12	9.8	12	6.8
	Mercury	mg/kg	5	40				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	400		30*		6.2	< 5	< 5	13	6.1	< 5	8.5	5.6	36	12	-	-	8.1	12	12	9.3	8.6	5.3	< 5	7.2	16
	Zinc	mg/kg	5	7400		230*		61	23	56	300	50	22	30	33	37	79	-	-	33	35	79	30	32	34	24	28	32
PAHs	Acenaphthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5			0.7		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	3				0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-	-	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2					1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	-	-	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.8	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5			170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.9	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH	mg/kg	0.5	300				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.7	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1		0.5	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1		55	70		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	m&p-Xylenes	mg/kg	0.2					< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	o-Xylene	mg/kg	0.1					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1		160	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3		40	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	-	-	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50					80	< 50	143	< 50	< 50	< 50	< 50	< 50	< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	93	< 50	< 50
	TRH C10-C14	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	23	< 20	< 20
	TRH C15-C28	mg/kg	50					80	< 50	70	< 50	< 50	< 50	< 50	< 50	< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C29-C36	mg/kg	50					< 50	< 50	73	< 50	< 50	< 50	< 50	< 50	< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	70	< 50	< 50
	TRH C6-C9	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50			120		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50		110			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100			300		100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100			2800		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20		45	180		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Notes

*	Based on an average pH of 6.5, a CEC of 9 meq/100g and clay content of >10%.
ND	Not detected
NL	Not limiting
Result	Concentration exceeds adopted human health critieria
Result	Concentration exceeds adopted health screening level, vapour intrusion (Residential) -Sand 0-1m
Result	Concentration exceeds adopted ecological investigation and screening levels, (residential) - sand 0-1

1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM
2 NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential, Sand 0m to <1m
3 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM

Table 2 -
Soil Analytical Results - Stockpile Samples
NEW16P-0119

Analytes		Units	EQL	HIL-A [1]	HSL A&B [2]	EILs/ESLs [3]	Field ID	SP8-2	SP8-3	SP8-4	SP8-5	SP9-1	SP9-2	SP9-3	SP9-4	SP9-5	SP9-6	SP10-1	SP10-2	SP10-3	SP10-4	SP10-5	SP10-6	SP10-7	SP10-Asph
							Date	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016	25/08/2016
	Coal Tar	Present	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Present
Heavy Metals	Arsenic	mg/kg	2	100		100		9.8	13	16	17	29	41	41	24	140	34	9	6.8	9.8	12	4.8	6.6	14	-
	Cadmium	mg/kg	0.4	20				< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.4	< 0.4	-
	Chromium	mg/kg	5	100		400*		15	18	19	20	25	21	21	18	30	19	12	11	21	16	11	23	18	-
	Copper	mg/kg	5	6000		280*		6.8	5.9	< 5	< 5	17	50	41	24	100	64	< 5	7.2	14	16	11	28	13	-
	Lead	mg/kg	5	300		1100		8.2	9.7	14	9.7	28	66	41	40	65	100	9	7.9	7.2	46	9.3	24	28	-
	Mercury	mg/kg	5	40				< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
	Nickel	mg/kg	5	400		30*		17	12	12	12	< 5	< 5	< 5	5	8	6.2	5.5	8.5	12	8.9	38	34	19	-
	Zinc	mg/kg	5	7400		230*		39	59	72	69	220	1000	350	520	950	1600	52	110	36	120	27	160	110	-
PAHs	Acenaphthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-
	Acenaphthylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-
	Anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	3.9	1	< 0.5	-
	Benz(a)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	24	5.9	< 0.5	-
	Benzo(a)pyrene	mg/kg	0.5			0.7		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	20	5.1	< 0.5	-
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	33	8.6	< 0.5	-
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	3				0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	33	8.6	0.6	-
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2					1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	33	8.6	1.2	-
	Benzo(b&j)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	21	5.6	< 0.5	-
	Benzo(g.h.i)perylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	14	4	< 0.5	-
	Benzo(k)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	16	5	< 0.5	-
	Chrysene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	22	5.9	< 0.5	-
	Dibenz(a.h)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	5.2	1.4	< 0.5	-
	Fluoranthene	mg/kg	0.5					0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	45	15	< 0.5	-
	Fluorene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	12	3.4	< 0.5	-
	Naphthalene	mg/kg	0.5			170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-
	Phenanthrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	12	2.5	< 0.5	-
	Pyrene	mg/kg	0.5					0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	40	14	< 0.5	-
	Total PAH	mg/kg	0.5	300				1.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	235.1	68.8	< 0.5	-
BTEX	Benzene	mg/kg	0.1		0.5	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
	Ethylbenzene	mg/kg	0.1		55	70		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
	m&p-Xylenes	mg/kg	0.2					< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-
	o-Xylene	mg/kg	0.1					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
	Toluene	mg/kg	0.1		160	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
	Xylenes - Total	mg/kg	0.3		40	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	-
TRH	TRH C10-36 (Total)	mg/kg	50					< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	51	720	240	< 50	-
	TRH C10-C14	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	20	< 20	< 20	< 20	< 20	< 20	-
	TRH C15-C28	mg/kg	50					< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	490	130	< 50	-
	TRH C29-C36	mg/kg	50					< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	51	230	110	< 50	-
	TRH C6-C9	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-
	Naphthalene	mg/kg	0.5					< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-
	TRH >C10-C16	mg/kg	50			120		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	-
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50		110			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	-
	TRH >C16-C34	mg/kg	100			300		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	640	180	< 100	-
	TRH >C34-C40	mg/kg	100			2800		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	-
	TRH C6-C10	mg/kg	20					< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-
	TRH C6-C10 less BTEX (F1)	mg/kg	20		45	180		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-

Notes

* Based on an average pH of 6.5, a CEC of 9 meq/100g and clay content of >10%.

ND Not detected

NL Not limiting

Result Concentration exceeds adopted human health critieria

Result Concentration exceeds adopted health screening level, vapour intrusion (Residential) -Sand 0-1m

Result Concentration exceeds adopted ecological investigation and screening levels, (residential) - sand 0-1

1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM

2 NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential, Sand 0m to <1m

3 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM

Table 3
Asbestos Sampling Results
NEW16P-0119

				Location	SP5	SP5	Vicinity of Demountables	SP5	SP5	SP1						SP5									
				Field ID	ASB1	ASB2	ASB3	ASB4	Tile 1	SP1-1	SP1-2	SP1-3	SP1-4	SP1-5	SP1-6	SP5-1	SP5-2	SP5-3	SP5-4	SP5-5	SP5-6	SP5-7	SP5-8	SP5-9	SP5-10
				Date	4/08/2016	4/08/2016	9/08/2016	9/08/2016	4/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016
Analytes		Units	EQL	HIL-A [1]																					
Asbestos	Potential ACM Fragments	-	Detect		ND	Detected	ND	Detected	Detected	-	-	-	-	-	Detected	-	-	-	Detected	-	-	-	-	-	-
	Bonded ACM Fragments	g	0.00		-	-	-	-	-	-	-	-	-	-	23	-	-	-	9	-	-	-	-	-	-
	Bonded ACM	%	0.001	0.01	-	-	-	-	-	-	-	-	-	-	0.00069*	-	-	-	0.00027*	-	-	-	-	-	-
	FA*/AF**	%	0.001	0.001	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes

ND Not detected

RED Sample contains asbestos

Result Sample exceeds adopted guidelines

1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Table 1A(1): Health Investigation Levels

*

** Fibrous asbestos (FA) - friable asbestos material, such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products. Asbestos fines (AF) - includes free fibres of asbestos, small fibre bundles and also ACM fragments that pass through a 7mm x 7mm sieve.

^ Density of soil (2.0kg/L) based on geotechnical testing of sandy clay material on site

Table 4-
Waste Classification Results
NEW16P-0119

Analytes		Units	EQL	NSW 2014 General Solid Waste (CT1 Values)1	NSW 2014 General Solid Waste (SCC1 values)2	NSW 2014 Restricted Solid Waste (CT1 values)3	NSW 2014 Restricted Solid Waste (SCC1 values)4	Field ID	TP01_0.0-0.1	TP02_0.0-0.1	TP03_0.0-0.1	TP03_0.2-0.3	TP04_0.0-0.1	TP05_0.0-0.1	TP06_0.0-0.1	TP06_0.3-0.4	TP07_0.0-0.1	TP08_0.0-0.1	TP09_0.0-0.1	TP10_0.0-0.1	TP11_0.0-0.1	TP12_0.0-0.1	TP13_0.0-0.1	TP14_0.0-0.1
								Date	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	9/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016	10/08/2016
Heavy Metals	Arsenic	mg/kg	2	100	500	400	2000		8.1	< 2	< 2	17	< 2	9.7	7.6	9.1	< 2	12	3.3	15	5.8	7.8	16	7.4
	Arsenic (TCLP)	mg/L	0.01		5		20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cadmium	mg/kg	0.4	20		80			0.4	< 0.4	1	0.7	< 0.4	< 0.4	< 0.4	< 0.4	0.6	< 0.4	0.7	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400			31	24	30	41	40	19	23	18	13	22	17	11	17	16	34	13
	Copper	mg/kg	5						26	11	27	< 5	22	< 5	15	< 5	< 5	12	5.9	< 5	7.3	< 5	< 5	< 5
	Lead	mg/kg	5	100		400			< 5	14	< 5	< 5	< 5	< 5	< 5	12	< 5	36	14	31	9.8	15	11	11
	Mercury	mg/kg	5	4		16			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	40		160			19	21	22	14	21	< 5	14	< 5	8.1	12	8.8	< 5	13	6.9	6	< 5
	Zinc	mg/kg	5						84	51	67	66	52	21	47	28	42	190	51	19	34	34	12	8.8
PAHs	Acenaphthene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	0.7	10	3.2	23		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene (TCLP)	mg/L	0.001		0.04	0.16			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6						0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2						1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH*	mg/kg	0.5	200		800			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1	10		40			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	600		2400			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	288		1152			< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	1000		4000			< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50	10,000		40,000			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	8950	< 50	< 50	420	< 50	< 50
	TRH C10-C14	mg/kg	20						< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	3300	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50						< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	5400	< 50	< 50	180	< 50	< 50
	TRH C29-C36	mg/kg	50						< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	250	< 50	< 50	240	< 50	< 50
	TRH C6-C9	mg/kg	20	650		2600			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5						< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50						< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	3700	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50						< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	3700	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100						< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	4600	< 100	< 100	370	< 100	< 100
	TRH >C34-C40	mg/kg	100						< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	110	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20						< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20						< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
OCPs	4.4'-DDD	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	4.4'-DDE	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	4.4'-DDT	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	DDE, DDT, DDD	mg/kg	0.15						-	-	<0.15	-	<0.15	-	-	-	-	-	-	-	-	<0.15	-	-
	a-BHC	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Aldrin and Dieldrin	mg/kg	0.10						-	-	<0.1	-	<0.1	-	-	-	-	-	-	-	-	<0.1	-	-
	Aldrin	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	b-BHC	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Chlordanes - Total	mg/kg	0.10						-	-	< 0.1	-	< 0.1	-	-	-	-	-	-	-	-	< 0.1	-	-
	d-BHC	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Dieldrin	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Endosulfan I	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Endosulfan II	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Endosulfan sulphate	mg/kg	0.05	60		240			-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Endrin	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Endrin aldehyde	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Endrin ketone	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	g-BHC (Lindane)	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Heptachlor	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Heptachlor epoxide	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Hexachlorobenzene	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Methoxychlor	mg/kg	0.05						-	-	< 0.05	-	< 0.05	-	-	-	-	-	-	-	-	< 0.05	-	-
	Toxaphene	mg/kg	1.00						-	-	< 1	-	< 1	-	-	-	-	-	-	-	-	< 1	-	-

Notes

ND Not detected

Result Exceed NSW 2014 General Solid Waste (without TCLP)

Result Exceed NSW 2014 General Solid Waste (withTCLP)

Result Exceed NSW 2014 Restricted Solid Waste (without TCLP)

Result Exceed NSW 2014 Restricted Solid Waste (with TCLP)

[1] Contamination Threshold Value (CT1) for General Solid Waste

[2] Specific Contaminant Concentration (SCC1) for General Solid Waste

[3] Contamination Threshold Value (CT2) for Restricted Solid Waste

[4] Specific Contaminant Concentration (SCC2) for Restricted Solid Waste

Table 4-
Waste Classification Results
NEW16P-0119

Analytes		Units	EQL	NSW 2014 General Solid Waste (CT1 Values)1	NSW 2014 General Solid Waste (SCC1 values)2	NSW 2014 Restricted Solid Waste (CT1 values)3	TP15_0.0-0.1 10/08/2016	TP16_0.0-0.1 10/08/2016	TP17_0.0-0.1 10/08/2016	TP18_0.0-0.1 10/08/2016	TP19_0.0-0.1 9/08/2016	TP20_0.0-0.1 10/08/2016	TP21_0.0-0.1 10/08/2016	TP22_0.0-0.1 10/08/2016	TP22_0.3-0.6 10/08/2016	TP23_0.0-0.1 10/08/2016	TP24_0.0-0.1 10/08/2016	TP25_0.0-0.1 10/08/2016	TP26_0.0-0.1 10/08/2016	TP27-0.0-0.1 25/08/2016	TP28-0.0-0.1 25/08/2016	TP29-0.0-0.1 25/08/2016	TP30-0.0-0.1 25/08/2016
Heavy Metals	Arsenic	mg/kg	2	100	500	400	4	6.3	7.6	11	18	4.9	6.4	8.4	17	7.9	7.4	13	11	11	11	11	11
	Arsenic (TCLP)	mg/L	0.01		5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cadmium	mg/kg	0.4	20		80	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400	9.4	10	13	24	21	13	14	13	35	19	10	25	12	14	13	16	17
	Copper	mg/kg	5				< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	7.2	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Lead	mg/kg	5	100		400	7.7	7.2	13	9.6	6.4	9.2	8.6	8	11	6.9	12	22	9.2	8.5	8.1	8.1	6.1
	Mercury	mg/kg	5	4		16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	40		160	< 5	< 5	5.4	9.8	11	< 5	< 5	7.2	12	10	< 5	9.3	< 5	< 5	< 5	< 5	5.1
	Zinc	mg/kg	5				< 5	5.8	20	27	61	9.7	6.1	29	37	28	15	35	15	17	20	20	31
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	0.7	10	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene (TCLP)	mg/L	0.001		0.04	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6				0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2				1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH*	mg/kg	0.5	200		800	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1	10		40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	600		2400	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	288		1152	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	1000		4000	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50	10,000		40,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	168	< 50	195	197	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C10-C14	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	29	< 20	26	50	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	87	< 50	110	74	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C29-C36	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	52	< 50	59	73	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C6-C9	mg/kg	20	650		2600	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	55	55	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	55	55	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	110	< 100	110	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
OCPs	4.4'-DDD	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	DDE, DDT, DDD	mg/kg	0.15				<0.15	-	-	-	-	-	<0.15	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Aldrin and Dieldrin	mg/kg	0.10				<0.1	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.10				< 0.1	-	-	-	-	-	< 0.1	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05	60		240	< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.05				< 0.05	-	-	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-	-
	Toxaphene	mg/kg	1.00				< 1	-	-	-	-	-	< 1	-	-	-	-	-	-	-	-	-	-

Notes

ND Not detected

Result Exceed NSW 2014 General Solid Waste (without TCLP)

Result Exceed NSW 2014 General Solid Waste (withTCLP)

Result Exceed NSW 2014 Restricted Solid Waste (without TCLP)

Result Exceed NSW 2014 Restricted Solid Waste (with TCLP)

[1] Contamination Threshold Value (CT1) for General Solid Waste

[2] Specific Contaminant Concentration (SCC1) for General Solid Waste

[3] Contamination Threshold Value (CT2) for Restricted Solid Waste

[4] Specific Contaminant Concentration (SCC2) for Restricted Solid Waste

Table 4-
Waste Classification Results
NEW16P-0119

Analytes		Units	EQL	NSW 2014 General Solid Waste (CT1 Values)1	NSW 2014 General Solid Waste (SCC1 values)2	NSW 2014 Restricted Solid Waste (CT1 values)3	TP30-0.2-0.3 25/08/2016	TP31-0.0-0.1 25/08/2016	TP32-0.0-0.1 25/08/2016	TP33-0.0-0.1 25/08/2016	SS1 25/08/2016	SS2 25/08/2016	SS3 25/08/2016	SP1 10/08/2016	SP1-1 24/08/2016	SP1-2 24/08/2016	SP1-3 24/08/2016	SP1-4 24/08/2016	SP1-5 24/08/2016
Heavy Metals	Arsenic	mg/kg	2	100	500	400	26	8.3	6.3	13	5.5	9.9	5	16	7.2	17	5.8	26	24
	Arsenic (TCLP)	mg/L	0.01		5		-	-	-	-	-	-	-	-	-	-	-	-	-
	Cadmium	mg/kg	0.4	20		80	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400	39	27	15	18	28	18	11	26	10	16	7.9	15	17
	Copper	mg/kg	5				< 5	32	8.2	< 5	31	19	< 5	18	< 5	9.4	< 5	24	31
	Lead	mg/kg	5	100		400	15	15	11	13	5.7	24	10	29	9.1	64	8.5	54	40
	Mercury	mg/kg	5	4		16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	40		160	7.9	20	10	6.8	18	40	< 5	8.5	5.1	< 5	< 5	8.4	9.3
	Zinc	mg/kg	5				38	39	47	63	36	200	30	440	110	120	27	450	560
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	16	2.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	0.7	10	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	14	1.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene (TCLP)	mg/L	0.001		0.04	0.16	-	-	-	-	-	<0.001	<0.001	-	-	-	-	-	-
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	22	3.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6				0.6	0.6	0.6	0.6	0.6	22	3.1	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2				1.2	1.2	1.2	1.2	1.2	22	3.1	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	16	2.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.1	1.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	12	1.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	15	2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	2.3	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	47	5.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.6	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	5	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	44	5.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH*	mg/kg	0.5	200		800	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	186.7	23.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1	10		40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	600		2400	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	288		1152	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	1000		4000	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50	10,000		40,000	< 50	< 50	< 50	61	< 50	540	260	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C10-C14	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50				< 50	< 50	< 50	< 50	< 50	330	110	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C29-C36	mg/kg	50				< 50	< 50	< 50	61	< 50	210	150	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C6-C9	mg/kg	20	650		2600	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100				< 100	< 100	< 100	< 100	< 100	460	180	< 100	< 100	< 100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100				< 100	< 100	< 100	< 100	< 100	120	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
OCPs	4.4'-DDD	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	DDE, DDT, DDD	mg/kg	0.15				-	-	-	<0.15	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Aldrin and Dieldrin	mg/kg	0.10				-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.10				-	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05	60		240	-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.05				-	-	-	< 0.05	-	-	-	-	-	-	-	-	-
	Toxaphene	mg/kg	1.00				-	-	-	< 1	-	-	-	-	-	-	-	-	-

Notes

ND Not detected

Result Exceed NSW 2014 General Solid Waste (without TCLP)

Result Exceed NSW 2014 General Solid Waste (withTCLP)

Result Exceed NSW 2014 Restricted Solid Waste (without TCLP)

Result Exceed NSW 2014 Restricted Solid Waste (with TCLP)

[1] Contamination Threshold Value (CT1) for General Solid Waste

[2] Specific Contaminant Concentration (SCC1) for General Solid Waste

[3] Contamination Threshold Value (CT2) for Restricted Solid Waste

[4] Specific Contaminant Concentration (SCC2) for Restricted Solid Waste

Table 4-
Waste Classification Results
NEW16P-0119

Analytes		Units	EQL	NSW 2014 General Solid Waste (CT1 Values)1	NSW 2014 General Solid Waste (SCC1 values)2	NSW 2014 Restricted Solid Waste (CT1 values)3	SP1-6 24/08/2016	SP2 10/08/2016	SP2-1 24/08/2016	SP2-2 24/08/2016	SP2-3 24/08/2016	SP3 10/08/2016	SP3-1 24/08/2016	SP3-2 24/08/2016	SP3-3 24/08/2016	SP3-4 24/08/2016	SP4 10/08/2016	SP4-1 24/08/2016	SP4-2 24/08/2016	SP4-3 24/08/2016	SP5 10/08/2016	SP5-1 24/08/2016	SP5-2 24/08/2016	SP5-3 24/08/2016	SP5-4 24/08/2016
Heavy Metals	Arsenic	mg/kg	2	100	500	400	18	29	29	9.3	16	18	13	7.2	30	19	9.3	15	16	17	17	11	17	12	17
	Arsenic (TCLP)	mg/L	0.01		5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cadmium	mg/kg	0.4	20		80	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400	22	21	19	12	24	20	10	12	32	25	16	21	19	14	23	14	24	21	22
	Copper	mg/kg	5				5.7	59	30	< 5	< 5	11	12	< 5	23	21	< 5	5.6	< 5	30	46	< 5	< 5	9.5	25
	Lead	mg/kg	5	100		400	15	100	61	7.8	13	22	21	12	43	99	7.1	14	11	29	15	12	15	22	36
	Mercury	mg/kg	5	4		16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	40		160	6.2	19	5.3	6.7	6.9	10	< 5	< 5	< 5	8.9	< 5	< 5	< 5	5.8	16	6.2	< 5	< 5	13
	Zinc	mg/kg	5				66	1200	610	40	44	450	130	21	410	530	28	37	26	620	270	61	23	56	300
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	0.7	10	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene (TCLP)	mg/L	0.001		0.04	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6				0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2				1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH*	mg/kg	0.5	200		800	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1	10		40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	600		2400	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	288		1152	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	1000		4000	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50	10,000		40,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	174	< 50	58	< 50	80	< 50	143	< 50
	TRH C10-C14	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	74	< 50	< 50	< 50	80	< 50	70	< 50
	TRH C29-C36	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	100	< 50	58	< 50	< 50	< 50	73	< 50
	TRH C6-C9	mg/kg	20	650		2600	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100	< 100	< 100	< 100	100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
OCPs	4.4'-DDD	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDE, DDT, DDD	mg/kg	0.15				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin and Dieldrin	mg/kg	0.10				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.10				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05	60		240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Toxaphene	mg/kg	1.00				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

ND Not detected

Result Exceed NSW 2014 General Solid Waste (without TCLP)

Result Exceed NSW 2014 General Solid Waste (withTCLP)

Result Exceed NSW 2014 Restricted Solid Waste (without TCLP)

Result Exceed NSW 2014 Restricted Solid Waste (with TCLP)

[1] Contamination Threshold Value (CT1) for General Solid Waste

[2] Specific Contaminant Concentration (SCC1) for General Solid Waste

[3] Contamination Threshold Value (CT2) for Restricted Solid Waste

[4] Specific Contaminant Concentration (SCC2) for Restricted Solid Waste

Table 4-
Waste Classification Results
NEW16P-0119

Analytes		Units	EQL	NSW 2014 General Solid Waste (CT1 Values)1	NSW 2014 General Solid Waste (SCC1 values)2	NSW 2014 Restricted Solid Waste (CT1 values)3	SP5-6 24/08/2016	SP5-7 24/08/2016	SP5-8 24/08/2016	SP5-5 24/08/2016	SP5-9 24/08/2016	SP5-10 24/08/2016	SP6-1 10/08/2016	SP6-2 10/08/2016	SP6-3 24/08/2016	SP6-4 24/08/2016	SP6-5 24/08/2016	SP6-7 24/08/2016	SP7-1 25/08/2016	SP7-2 25/08/2016	SP8-1 25/08/2016	SP8-2 25/08/2016	SP8-3 25/08/2016	SP8-4 25/08/2016	SP8-5 25/08/2016	SP9-1 25/08/2016	SP9-2 25/08/2016	SP9-3 25/08/2016
Heavy Metals	Arsenic	mg/kg	2	100	500	400	11	12	14	20	8	11	13	3.4	13	10	9.1	17	9.4	11	14	9.8	13	16	17	29	41	41
	Arsenic (TCLP)	mg/L	0.01		5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cadmium	mg/kg	0.4	20		80	< 0.4	< 0.4	< 0.4	< 0.4	0.6	< 0.4	0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400	18	14	23	20	28	17	22	17	18	18	14	19	12	12	20	15	18	19	20	25	21	21
	Copper	mg/kg	5				6	< 5	< 5	< 5	24	8.3	< 5	7.3	11	< 5	5.3	< 5	< 5	< 5	5.2	6.8	5.9	< 5	< 5	17	50	41
	Lead	mg/kg	5	100		400	11	20	15	17	9.8	22	14	< 5	23	9.9	9.4	12	9.8	12	6.8	8.2	9.7	14	9.7	28	66	41
	Mercury	mg/kg	5	4		16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	40		160	6.1	< 5	8.5	5.6	36	12	8.1	12	12	9.3	8.6	5.3	< 5	7.2	16	17	12	12	12	< 5	< 5	< 5
	Zinc	mg/kg	5				50	22	30	33	37	79	33	35	79	30	32	34	24	28	32	39	59	72	69	220	1000	350
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	0.7	10	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene (TCLP)	mg/L	0.001		0.04	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6				0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2				1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH*	mg/kg	0.5	200		800	< 0.5	< 0.5	< 0.5	< 0.5	1.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1	10		40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	600		2400	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	288		1152	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	1000		4000	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50	10,000		40,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	93	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C10-C14	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	23	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C29-C36	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	70	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH C6-C9	mg/kg	20	650		2600	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
OCPs	4.4'-DDD	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDE, DDT, DDD	mg/kg	0.15				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin and Dieldrin	mg/kg	0.10				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.10				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05	60		240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Toxaphene	mg/kg	1.00				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

ND Not detected

Result Exceed NSW 2014 General Solid Waste (without TCLP)

Result Exceed NSW 2014 General Solid Waste (withTCLP)

Result Exceed NSW 2014 Restricted Solid Waste (without TCLP)

Result Exceed NSW 2014 Restricted Solid Waste (with TCLP)

[1] Contamination Threshold Value (CT1) for General Solid Waste

[2] Specific Contaminant Concentration (SCC1) for General Solid Waste

[3] Contamination Threshold Value (CT2) for Restricted Solid Waste

[4] Specific Contaminant Concentration (SCC2) for Restricted Solid Waste

Table 4-
Waste Classification Results
NEW16P-0119

Analytes		Units	EQL	NSW 2014 General Solid Waste (CT1 Values)1	NSW 2014 General Solid Waste (SCC1 values)2	NSW 2014 Restricted Solid Waste (CT1 values)3	SP9-4 25/08/2016	SP9-5 25/08/2016	SP9-6 25/08/2016	SP10-1 25/08/2016	SP10-2 25/08/2016	SP10-3 25/08/2016	SP10-4 25/08/2016	SP10-5 25/08/2016	SP10-6 25/08/2016	SP10-7 25/08/2016
Heavy Metals	Arsenic	mg/kg	2	100	500	400	24	140	34	9	6.8	9.8	12	4.8	6.6	14
	Arsenic (TCLP)	mg/L	0.01		5		-	<0.01	-	-	-	-	-	-	-	-
	Cadmium	mg/kg	0.4	20		80	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		400	18	30	19	12	11	21	16	11	23	18
	Copper	mg/kg	5				24	100	64	< 5	7.2	14	16	11	28	13
	Lead	mg/kg	5	100		400	40	65	100	9	7.9	7.2	46	9.3	24	28
	Mercury	mg/kg	5	4		16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	40		160	5	8	6.2	5.5	8.5	12	8.9	38	34	19
	Zinc	mg/kg	5				520	950	1600	52	110	36	120	27	160	110
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	3.9	1	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	24	5.9	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	0.7	10	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	20	5.1	< 0.5
	Benzo(a)pyrene (TCLP)	mg/L	0.001		0.04	0.16	-	-	-	-	-	-	-	<0.001	<0.001	-
	Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	33	8.6	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6				0.6	0.6	0.6	0.6	0.6	0.6	0.6	33	8.6	0.6
	Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2				1.2	1.2	1.2	1.2	1.2	1.2	1.2	33	8.6	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	21	5.6	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	14	4	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	16	5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	22	5.9	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	5.2	1.4	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	45	15	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	12	3.4	< 0.5
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	12	2.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	40	14	< 0.5
	Total PAH*	mg/kg	0.5	200		800	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	235.1	68.8	< 0.5
BTEX	Benzene	mg/kg	0.1	10		40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	600		2400	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	288		1152	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	1000		4000	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50	10,000		40,000	< 50	< 50	< 50	< 50	< 50	< 50	51	720	240	< 50
	TRH C10-C14	mg/kg	20				< 20	< 20	< 20	< 20	20	< 20	< 20	< 20	< 20	< 20
	TRH C15-C28	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	490	130	< 50
	TRH C29-C36	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	51	230	110	< 50
	TRH C6-C9	mg/kg	20	650		2600	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Naphthalene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH >C10-C16	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	640	180	< 100
	TRH >C34-C40	mg/kg	100				< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH C6-C10	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20				< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
OCPs	4.4'-DDD	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	DDE, DDT, DDD	mg/kg	0.15				-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Aldrin and Dieldrin	mg/kg	0.10				-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.10				-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05	60		240	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-
	Toxaphene	mg/kg	1.00				-	-	-	-	-	-	-	-	-	-

Notes

ND Not detected

Result Exceed NSW 2014 General Solid Waste (without TCLP)

Result Exceed NSW 2014 General Solid Waste (withTCLP)

Result Exceed NSW 2014 Restricted Solid Waste (without TCLP)

Result Exceed NSW 2014 Restricted Solid Waste (with TCLP)

[1] Contamination Threshold Value (CT1) for General Solid Waste

[2] Specific Contaminant Concentration (SCC1) for General Solid Waste

[3] Contamination Threshold Value (CT2) for Restricted Solid Waste

[4] Specific Contaminant Concentration (SCC2) for Restricted Solid Waste

Table 5 -
Surface Water Results
NEW16P-0119

					Field_ID	WS1	WS2
					Sampled_Date	24/08/2016	25/08/2016
Analytes		Units	ANZECC 2000 Freshwater 95%[1]	Irrigation [2]			
Oil and Grease	Oil and Grease	mg/L				<10	<10
Salinity	Salinity (from EC)	mg/L				84	150
Redox Potential	Redox Potential	mV				38	292
pH	pH (1:5 Aqueous extract)	pH				6.5	7.1
Heavy Metals	Arsenic	µg/L	24	100		0.7	0.2
	Cadmium	µg/L	0.2	10		0.3	<0.2
	Chromium	µg/L	1			9	2
	Copper	µg/L	1.4	20		6	1
	Lead	µg/L	3.4	2000		12	2
	Mercury	µg/L	0.6	2		<0.1	<0.1
	Nickel	µg/L	11	200		7	1
	Zinc	µg/L	8	2000		1800	10
PAHs	Acenaphthene	µg/L				<1	<1
	Acenaphthylene	µg/L				<1	<1
	Anthracene	µg/L	0.01**			<1	<1
	Benz(a)anthracene	µg/L				<1	<1
	Benzo(a)pyrene	µg/L	0.1**			<1	<1
	Benzo(b&j)fluoranthene	µg/L				<1	<1
	Benzo(g.h.i)perylene	µg/L				<1	<1
	Benzo(k)fluoranthene	µg/L				<1	<1
	Chrysene	µg/L				<1	<1
	Dibenz(a.h)anthracene	µg/L				<1	<1
	Fluoranthene	µg/L	1			<1	<1
	Fluorene	µg/L				<1	<1
	Indeno(1.2.3-cd)pyrene	µg/L				<1	<1
	Naphthalene	µg/L				<1	<1
	Phenanthrene	µg/L	0.6			<1	<1
	Pyrene	µg/L				<1	<1
	Total PAH	µg/L				<1	<1
BTEX	Benzene	µg/L	950			< 0.001	< 0.001
	Ethylbenzene	µg/L	80**			< 0.001	< 0.001
	m&p-Xylenes	µg/L				< 0.002	< 0.002
	o-Xylene	µg/L	350			< 0.001	< 0.001
	Toluene	µg/L	180**			< 0.001	< 0.001
	Xylenes - Total	µg/L	75**a			< 0.003	< 0.003
TRH	TRH C10-36 (Total)	µg/L				< 0.1	< 0.1
	TRH C10-C14	µg/L				< 0.05	< 0.05
	TRH C15-C28	µg/L				< 0.1	< 0.1
	TRH C29-C36	µg/L				< 0.1	< 0.1
	TRH C6-C9	µg/L				< 0.02	< 0.02
	Naphthalene	µg/L	16			< 0.01	< 0.01
	TRH >C10-C16	µg/L				< 0.05	< 0.05
	TRH >C10-C16 less Naphthalene	µg/L				< 0.05	< 0.05
	TRH >C16-C34	µg/L				< 0.1	< 0.1
	TRH >C34-C40	µg/L				< 0.1	< 0.1
	TRH C6-C10	µg/L				< 0.02	< 0.02
	TRH C6-C10 less BTEX (F1)	µg/L				< 0.02	< 0.02

Result	Concentration exceeds adopted ANZECC criteria
Result	Concentration exceeds adopted irrigation criteria
-	Not Analysed

1. ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Table 3.4.1

**Low reliability value - ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

a. Conservatively assumes xylene is m-xylene.

4. ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Section 4.2.

Table 6 -
QA/QC Results
NEW16P-0119

			Field ID	SP5-1	QC8		SP5-1	QC9		SP2-3	QC10		SP2-3	QC11		SP9-1	QC12		SP9-1	QC13		SP10-1	QC14		SP10-1
			Date	24/08/2016	24/08/2016	RPD %	24/08/2016	24/08/2016	RPD %	24/08/2016	24/08/2016	RPD %	24/08/2016	24/08/2016	RPD %	25/08/2016	25/08/2016	RPD %	25/08/2016	25/08/2016	RPD %	25/08/2016	25/08/2016	RPD %	25/08/2016
			Comments	Duplicate			Triplicate			Duplicate			Triplicate			Duplicate			Triplicate			Duplicate			Tripl
Analytes		Units	EQL																						
Heavy Metals	Arsenic	mg/kg	2	11	11	0	11	7	44.4	16	10	46.2	16	8	66.7	29	29	0.0	**29**	**17**	**52.2**	9	3.8	81.3	9
	Cadmium	mg/kg	0.4	0.4	< 0.4	0	0.4	<1	85.7	< 0.4	< 0.4	0.0	< 0.4	<1	0.0	< 0.4	< 0.4	0.0	< 0.4	<1	0.0	< 0.4	< 0.4	0.0	< 0.4
	Chromium	mg/kg	5	14	15	6.9	14	15	6.9	24	16	40.0	24	17	34.1	25	21	17.4	25	23	8.3	12	9.1	27.5	12
	Copper	mg/kg	5	< 5	< 5	0.0	< 5	<5	0.0	< 5	< 5	0.0	< 5	<5	0.0	17	23	30.0	17	13	26.7	< 5	< 5	0.0	< 5
	Lead	mg/kg	5	12	8.5	34.1	12	11	8.7	13	11	16.7	13	11	16.7	28	34	19.4	**28**	**60**	**72.7**	9	8.8	2.2	9
	Mercury	mg/kg	5	< 0.1	< 0.1	0.0	< 0.1	<0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	<0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	<0.1	0.0	< 0.1	< 0.1	0.0	< 0.1
	Nickel	mg/kg	5	6.2	5.9	5.0	6.2	7	12.1	6.9	6.9	0.0	6.9	8	14.8	< 5	< 5	0.0	< 5	4	0.0	5.5	< 5	0.0	5.5
	Zinc	mg/kg	5	61	56	8.5	61	58	5.0	44	51	14.7	44	44	0.0	**220**	**370**	**50.8**	220	242	9.5	52	50	3.9	52
PAHs	Acenaphthene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Acenaphthylene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Anthracene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Benz(a)anthracene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Benzo(a)pyrene TEQ (lower bound) *	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Benzo(a)pyrene TEQ (medium bound) *	mg/kg	0.6	0.6	0.6	0.0	0.6	0.6	0.0	0.6	0.6	0.0	0.6	0.6	0.0	0.6	0.6	0.0	0.6	0.6	0.0	0.6	0.6	0.0	0.6
	Benzo(a)pyrene TEQ (upper bound) *	mg/kg	1.2	1.2	1.2	0.0	1.2	1.2	0.0	1.2	1.2	0.0	1.2	1.2	0.0	1.2	1.2	0.0	1.2	1.2	0.0	1.2	1.2	0.0	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Chrysene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Fluoranthene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Fluorene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Naphthalene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Phenanthrene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Pyrene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	Total PAH*	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
BTEX	Benzene	mg/kg	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1
	Ethylbenzene	mg/kg	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1
	m&p-Xylenes	mg/kg	0.2	< 0.2	< 0.2	0.0	< 0.2	< 0.2	0.0	< 0.2	< 0.2	0.0	< 0.2	< 0.2	0.0	< 0.2	< 0.2	0.0	< 0.2	< 0.2	0.0	< 0.2	< 0.2	0.0	< 0.2
	o-Xylene	mg/kg	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1
	Toluene	mg/kg	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0	< 0.1
	Xylenes - Total	mg/kg	0.3	< 0.3	< 0.3	0.0	< 0.3	< 0.3	0.0	< 0.3	< 0.3	0.0	< 0.3	< 0.3	0.0	< 0.3	< 0.3	0.0	< 0.3	< 0.3	0.0	< 0.3	< 0.3	0.0	< 0.3
TRH	TRH C10-36 (Total)	mg/kg	50	80	212	90.4	80	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50
	TRH C10-C14	mg/kg	20	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20
	TRH C15-C28	mg/kg	50	80	130	47.6	80	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50
	TRH C29-C36	mg/kg	50	< 50	82	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50
	TRH C6-C9	mg/kg	20	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20
	Naphthalene	mg/kg	0.5	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5	< 0.5	0.0	< 0.5
	TRH >C10-C16	mg/kg	50	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50	< 50	0.0	< 50
	TRH >C16-C34	mg/kg	100	100	180	57.1	100	130	26.1	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100
	TRH >C34-C40	mg/kg	100	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100	< 100	0.0	< 100
	TRH C6-C10	mg/kg	20	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20	< 20	0.0	< 20

*RPDs have only been considered where a concentration is greater than 10 times the EQL.
**High RPDs are in bold (Acceptable RPD range is 50% (>10 x EQL))

Table 6 -
QA/QC Results
NEW16P-0119

			Field ID	QC15	RPD %	QC16
			Date	25/08/2016		25/08/2016
			Comments	cate		Trip Blank
Analytes		Units	EQL			
Heavy Metals	Arsenic	mg/kg	2	6	40.0	-
	Cadmium	mg/kg	0.4	<1	0.0	-
	Chromium	mg/kg	5	13	8.0	-
	Copper	mg/kg	5	<5	0.0	-
	Lead	mg/kg	5	10	10.5	-
	Mercury	mg/kg	5	<0.1	0.0	-
	Nickel	mg/kg	5	4	0.0	-
	Zinc	mg/kg	5	50	3.9	-
PAHs	Acenaphthene	mg/kg	0.5	< 0.5	0.0	-
	Acenaphthylene	mg/kg	0.5	< 0.5	0.0	-
	Anthracene	mg/kg	0.5	< 0.5	0.0	-
	Benz(a)anthracene	mg/kg	0.5	< 0.5	0.0	-
	Benzo(a)pyrene	mg/kg	0.5	< 0.5	0.0	-
	Benzo(a)pyrene TEQ (lower bound) *	mg/kg	0.5	< 0.5	0.0	-
	Benzo(a)pyrene TEQ (medium bound) *	mg/kg	0.6	0.6	0.0	-
	Benzo(a)pyrene TEQ (upper bound) *	mg/kg	1.2	1.2	0.0	-
	Benzo(b&j)fluoranthene	mg/kg	0.5	< 0.5	0.0	-
	Benzo(g.h.i)perylene	mg/kg	0.5	< 0.5	0.0	-
	Benzo(k)fluoranthene	mg/kg	0.5	< 0.5	0.0	-
	Chrysene	mg/kg	0.5	< 0.5	0.0	-
	Dibenz(a.h)anthracene	mg/kg	0.5	< 0.5	0.0	-
	Fluoranthene	mg/kg	0.5	< 0.5	0.0	-
	Fluorene	mg/kg	0.5	< 0.5	0.0	-
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5	< 0.5	0.0	-
	Naphthalene	mg/kg	0.5	< 0.5	0.0	-
	Phenanthrene	mg/kg	0.5	< 0.5	0.0	-
	Pyrene	mg/kg	0.5	< 0.5	0.0	-
	Total PAH*	mg/kg	0.5	< 0.5	0.0	-
BTEX	Benzene	mg/kg	0.1	< 0.1	0.0	< 0.001
	Ethylbenzene	mg/kg	0.1	< 0.1	0.0	< 0.001
	m&p-Xylenes	mg/kg	0.2	< 0.2	0.0	< 0.002
	o-Xylene	mg/kg	0.1	< 0.1	0.0	< 0.001
	Toluene	mg/kg	0.1	< 0.1	0.0	< 0.001
	Xylenes - Total	mg/kg	0.3	< 0.3	0.0	< 0.003
TRH	TRH C10-36 (Total)	mg/kg	50	< 50	0.0	-
	TRH C10-C14	mg/kg	20	< 20	0.0	-
	TRH C15-C28	mg/kg	50	< 50	0.0	-
	TRH C29-C36	mg/kg	50	< 50	0.0	-
	TRH C6-C9	mg/kg	20	< 20	0.0	< 0.02
	Naphthalene	mg/kg	0.5	< 0.5	0.0	-
	TRH >C10-C16	mg/kg	50	< 50	0.0	-
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50	< 50	0.0	-
	TRH >C16-C34	mg/kg	100	< 100	0.0	-
	TRH >C34-C40	mg/kg	100	< 100	0.0	-
	TRH C6-C10	mg/kg	20	< 20	0.0	< 0.02
	TRH C6-C10 less BTEX (F1)	mg/kg	20	< 20	0.0	-

*RPDs have only been considered where a concentration is greater than 10 times t
**High RPDs are in bold (Acceptable RPD range is 50% (>10 x EQL))

APPENDIX C:

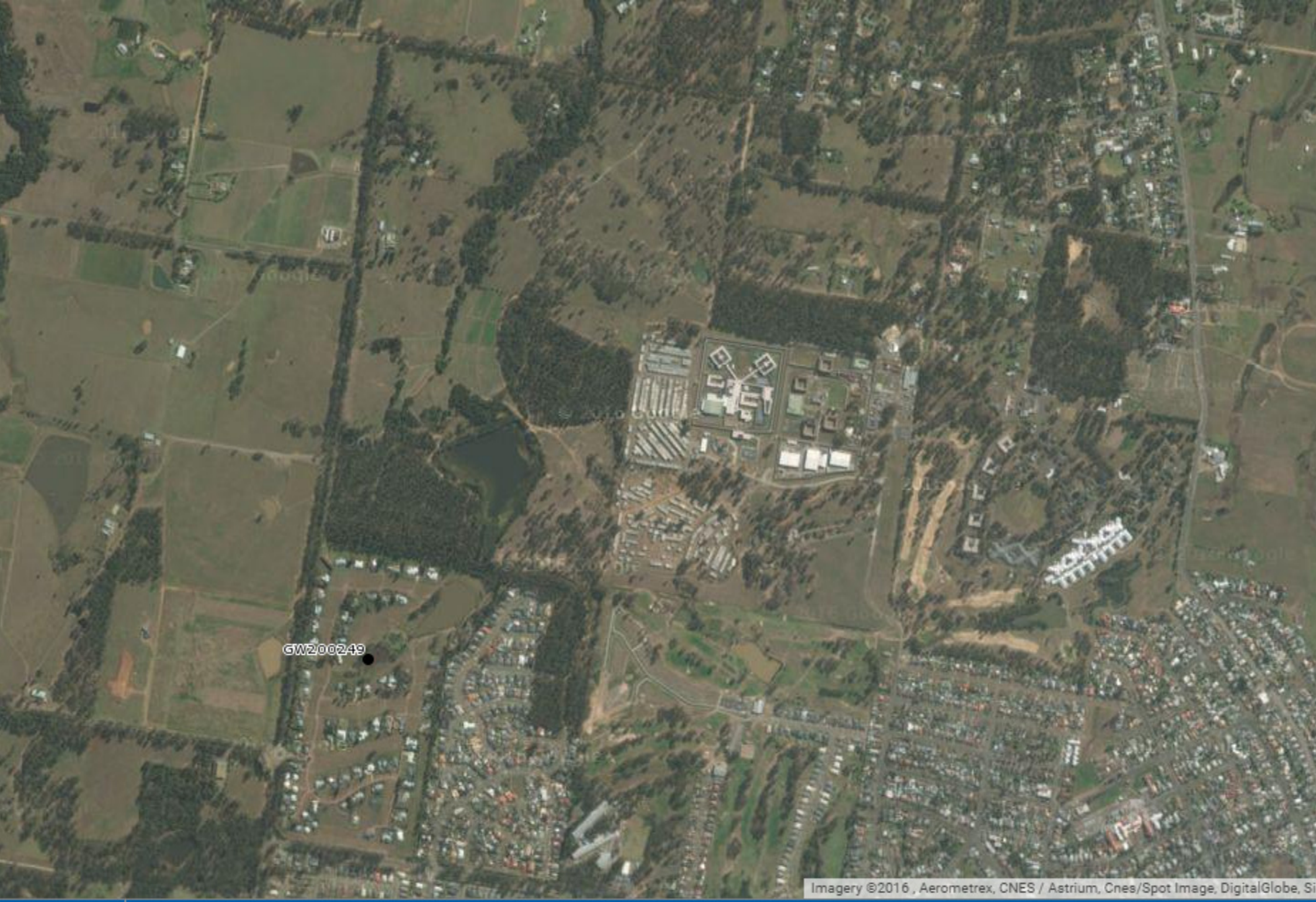
Historical Aerial Photograph Review


e Ln


Ridge Ln

APPENDIX D:

Groundwater Bore Search


GW200249
Imagery ©2016 , Aerometrex, CNES / Astrium, Cnes/Spot Image, DigitalGlobe, Si

NSW Office of Water
Work Summary

GW200249

Licence: 20BL168525
Licence Status: ACTIVE

Authorised Purpose(s): TEST BORE
Intended Purpose(s): TEST BORE

Work Type: Bore
Work Status: Filled
Construct.Method: Rotary - Percussion (Down Hole Hammer)
Owner Type:

Commenced Date:
Completion Date: 06/12/2002
Final Depth: 18.00 m
Drilled Depth: 18.00 m

Contractor Name: Slade Drilling
Driller: Paul Edwin Slade
Assistant Driller:

Property: N/A OAKEY CREEK ROAD POKOLBIN 2320
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield: 1.200

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.49	1/270158
Licensed:	NORTHUMBERLAND	POKOLBIN	Whole Lot 1//270158

Region: 20 - Hunter
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6367023.0
Easting: 343249.0
Latitude: 32°49'25.1"S
Longitude: 151°19'31.6"E

GS Map: -
MGA Zone: 0
Coordinate Source: Map Interpretation

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	18.00	150			Rotary - Percussion (Down Hole Hammer)

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
16.00	18.00	2.00	Unknown			1.20			

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.40	0.40	Topsoil	Topsoil	
0.40	6.00	5.60	clay	Clay	
6.00	18.00	12.00	silt	Silt	

Remarks

06/12/2002: Form A Remarks:
When getting the coordinates for the bore on this property, there were none provided so a rough estimate was taken according to a map view of the property. There was no room in the form to say that this bore was backfilled with drilled cuttings from depth 1 to 18m and sealed with concrete from 0 to 1m.

*** End of GW200249 ***

APPENDIX E:

Site Photographs

Photograph 1 - Looking south from centre/southern portion of the site

Photograph 2 - Looking north (from the centre of the site)

Client:	Lend Lease Pty Ltd	Photo No:	1 to 2
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	4 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 4 - Potential ACM from demountable eves (ACM 3)

Client:	Lend Lease Pty Ltd	Photo No:	3 to 4
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	4 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 5 - Looking south over SP1

Photograph 6 - Looking south east over SP2

Client:	Lend Lease Pty Ltd	Photo No:	5 to 6
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	4 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 7 - Looking east over SP3

Photograph 8 - Looking south east over SP4

Client:	Lend Lease Pty Ltd	Photo No:	7 to 8
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	4 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 9 - Looking east over SP5

Photograph 10 - Potential ACM observed next to SP5 (ACM4)

Client:	Lend Lease Pty Ltd	Photo No:	9 to 10
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	4 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 11 - Looking west at SP6

Photograph 12 - Looking south west over SP8

Client:	Lend Lease Pty Ltd	Photo No:	11 to 12
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	4 & 26 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 13 - Looking east over SP9

Photograph 14 - looking north east over SP10

Client:	Lend Lease Pty Ltd	Photo No:	13 to 14
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	26 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 15 - Looking west at SP7

Photograph 16 - Looking west over area of fill in western portion of the site

Client:	Lend Lease Pty Ltd	Photo No:	15 to 16
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	26 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 17 - Looking south over drainage line in south eastern portion of the site

Photograph 18 - Orange residual soils/ weathered rock excavated from below overlying topsoil/fill

Client:	Lend Lease Pty Ltd	Photo No:	17 to 18
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	26 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

Photograph 19 - Orange residual soils and weathered rock underlying topsoil/fill

Photograph 20 - Weathered rock

Client:	Lend Lease Pty Ltd	Photo No:	19 to 20
Project:	Cessnock Correctional Centre	Project No:	NEW16P-0119-AB
Location:	Lindsay Street, Cessnock NSW (Lot 2 DP76202)	Date Taken:	26 August 2016
Title:	Site Photographs	Date Compiled:	26 August 2016

APPENDIX F:

Test Pit Logs

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP01

CLIENT: LEND LEASE
PAGE: 1 OF 1
PROJECT: PROPOSED EXPANSION
JOB NO: NEW16P-0119
LOGGED BY: BE
LOCATION: CESSNOCK CORRECTIONAL CENTRE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
SURFACE RL:
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				GC	FILL: Sandy Clayey GRAVEL - fine to medium grained, sub-angular to sub-rounded, dark grey-brown, trace silt, root affected.	M				FILL - TOPSOIL
		0.30m					0.23m					
		B E 0.45m				CH	FILL: Sandy CLAY - medium to high plasticity, red-brown and dark brown, fine grained sand, with fine to coarse grained gravel, sub-angular to sub-rounded.	M ~ w_P		HP	420	FILL
				0.5			0.45m					
						CH	Sandy CLAY - medium to high plasticity, orange-brown and orange, fine grained sand.			HP	500	RESIDUAL SOIL
							0.70m					
						CL	Sandy CLAY / Clayey SAND - low to medium plasticity, grey and orange-brown, fine grained sand.	M < w_P	H			
				1.0			1.15m					
							1.20m Extremely Weathered SANDSTONE, breaks down into Clayey SAND - fine grained, grey and orange-brown, estimated very low strength.	D - M				EXTREMELY TO HIGHLY WEATHERED ROCK
							Hole Terminated at 1.20 m Practical Refusal					
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP02
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m		0.5		SC	Clayey SAND - fine to medium grained, dark brown, with fine to medium grained gravel, sub-angular to sub-rounded, root affected.	M				TOPSOIL
							0.25m Sandy CLAY - medium to high plasticity, orange-brown and red-brown, trace fine to medium grained sand.			HP	550	RESIDUAL SOIL
				1.0		CH				HP	520	
				1.5				M < w_P	H	HP	450	
							1.20m Sandy CLAY / Clayey SAND - low to medium plasticity, grey and orange-brown to red-brown, fine grained sand.					
						CL						
				2.0			1.85m 1.90m SANDSTONE - fine grained, dark grey-black and brown, estimated low stength.	M				HIGHLY WEATHERED ROCK
							Hole Terminated at 1.90 m Refusal					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

Qualtest LABORATORY (NSW) PTY LTD

CLIENT:	LEND LEASE	**TEST PIT NO:**	**TP03**
PROJECT:	PROPOSED EXPANSION	**PAGE:**	1 OF 1
		JOB NO:	NEW16P-0119
		LOGGED BY:	BE
LOCATION:	CESSNOCK CORRECTIONAL CENTRE	**DATE:**	9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR **SURFACE RL:**
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m **DATUM:**

METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E / QC1 / QC2 0.10m				SC	Clayey SAND - low plasticity, dark grey-brown, fine to medium grained sand, trace fine to coarse grained gravel, sub-angular, with silt, root affected.	M				TOPSOIL
		0.20m E 0.30m; 0.40m B 0.50m		0.15m		CH	Sandy CLAY - medium to high plasticiity, orange-brown to red-brown, fine grained sand.	M > Wp	VSt	HP	280	RESIDUAL SOIL
				0.5			Becoming red-brown to orange-brown and grey.			HP	360	
								M ~ Wp		HP	480 - 500	
										HP	560	
				1.0				M < Wp	H			
				1.5								
				1.80m			Extremely Weathered SANDSTONE, breaks down into Gravelly Clayey SAND - fine grained, grey, with some orange-brown, fine to medium grained gravel (sandstone fragments), estimated very low strength.	M	D - VD			EXTREMELY TO HIGHLY WEATHERED ROCK
				2.0			Increasing in strength with depth.					
				2.40m			Hole Terminated at 2.40 m Very slow progress					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP04
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				GP	FILL: Sandy GRAVEL - fine to coarse grained (max 40mm), dark brown, fine to coarse grained sand, with clay, root affected.	M				FILL - TOPSOIL
							0.20m					RESIDUAL SOIL
		0.50m		0.5			Sandy CLAY - medium to high plasticity, orange-brown with some red-brown, fine grained sand.			HP	570	
		B 0.80m								HP	500	
										HP	>600	
				1.0		CH	Becoming grey and orange-brown to red-brown.	$M < w_P$	H			
				1.5								
							1.80m					
				2.0		CL	Sandy CLAY / Clayey SAND - low plasticity, grey and orange-brown, fine grained sand.	M	D - VD			
							2.40m					
				2.5			Hole Terminated at 2.40 m Very slow progress					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP05

CLIENT: LEND LEASE
PAGE: 1 OF 1

PROJECT: PROPOSED EXPANSION
JOB NO: NEW16P-0119

LOGGED BY: BE

LOCATION: CESSNOCK CORRECTIONAL CENTRE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
SURFACE RL:

TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m		0.5		SM	Sandy SILT - low plasticity, grey-brown, fine to medium grained sand, trace fine to medium grained gravel, sub-rounded, trace rootlets.	M				SLOPE WASH
		0.45m E 0.55m					0.55m			HP	>600	RESIDUAL SOIL
				1.0		CH	Sandy CLAY - medium plasticity, orange-brown and red-brown, fine grained sand.	M < w_P	H			
				1.5			Becoming grey and orange-brown to red-brown.			HP	>600	
							1.80m					
				2.0			Hole Terminated at 1.80 m Very slow progress					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP06
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				GC	FILL: Sandy Clayey GRAVEL - fine to coarse grained, sub-angular to angular, dark grey-brown, fine to medium grained sand, fines of medium plasticity, root affected.	M				FILL - TOPSOIL
							0.15m					
		0.30m					Sandy CLAY - medium to high plasticity, orange-brown to red-brown, fine grained sand.			HP	460	RESIDUAL SOIL
		E 0.40m								HP	530	
				0.5						HP	>600	
							Becoming grey and orange-brown to red-brown.					
				1.0		CH		$M < w_P$ - $M \sim w_P$	H			
				1.5								
							1.80m					
							Extremely Weathered SANDSTONE, breaks down into Gravelly Clayey SAND - fine grained, grey, with some orange-brown, fine to medium grained gravel (sandstone fragments), estimated very low strength.					EXTREMELY WEATHERED ROCK
				2.0		SC		M				
				2.5			2.60m					
							Hole Terminated at 2.60 m Very slow progress					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP07
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SP	SAND - fine to coarse grained, brown, trace silt, root affected.					TOPSOIL - SLOPE WASH
							0.15m					
						SC	Clayey SAND - fine to medium grained, dark brown, fines of low plasticity, trace silt.	M	MD			SLOPE WASH
		0.40m					0.40m					
		E 0.50m		0.5		SP	SAND - fine to medium grained, grey-brown, trace silt.					
							0.55m					
						CI	Sandy CLAY - medium plasticity, orange-brown and dark grey, fine grained sand.	M > w_P	St	HP	180	RESIDUAL SOIL
										HP	180	
									VSt	HP	280	
				1.0						HP	320	
							1.00m					
						CL	Sandy CLAY / Clayey SAND - low plasticity, grey and orange-brown, fine grained sand.	M < w_P	H			
				1.5								
				2.0								
							2.05m					
							2.10m SANDSTONE - fine to coarse grained, orange-brown to brown and grey, estimated low to medium strength.	M				HIGHLY WEATHERED ROCK
							Hole Terminated at 2.10 m Refusal					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP08
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				CH	FILL: Sandy CLAY - medium to high plasticity, orange-brown with some grey, fine grained sand, with fine to coase grained gravel, sub-angular.		H			FILL
							0.20m					
							Sandy SILT / Silty SAND - low plasticity, grey-brown, fine grained sand, trace rootlets.			HP	>600	SLOPE WASH
		0.50m		0.5		SM	Becoming grey.		MD - D			
		E 0.60m										
		0.80m					0.60m					
		B 0.80m					Sandy CLAY / Clayey SAND - medium plasticity, orange-brown with some grey, fine grained sand.	$M < W_P$		HP	>600	RESIDUAL SOIL
				1.0								
						CI			H			
				1.5								
							1.80m					
				2.0		SC	Extremely weathered SANDSTONE, breaks down into Clayey SAND - fine to medium grained, orange and grey, with fine to medium grained gravel, estimated very low strength.	M				EXTREMELY WEATHERED ROCK
							2.00m					
							Hole Terminated at 2.00 m Very slow progress					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP09
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m		0		SM	Silty SAND - fine to medium grained, grey-brown, with clay, with fine to medium grained gravel, sub-angular to sub-rounded, root affected.	M				TOPSOIL
							0.20m					RESIDUAL SOIL
				0.5			Sandy CLAY - medium to high plasticity, orange-brown with some red-brown, fine grained sand.	M > w_P	VSt	HP	350	
										HP	280	
										HP	300	
				1.0		CH						
										HP	360	
				1.5						HP	380	
							Becoming grey and orange-brown to red-brown.		VSt - H	HP	410	
							1.70m					
							Sandy CLAY / Clayey SAND - low plasticity, grey and orange-brown to brown, fine to medium grained sand.	M < w_P	H			
				2.0		CL						
							2.30m					
							Hole Terminated at 2.30 m Very slow progress					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP10
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SC	Clayey SAND - fine to medium grained, dark brown, trace silt, root affected.	M				TOPSOIL
							0.20m					RESIDUAL SOIL
				0.5		CH	Sandy CLAY - medium to high plasticity, dark brown and orange-brown, fine grained sand.	M ~ w_P	VSt	HP	210	
										HP	220	
										HP	230	
							Becoming orange-brown.			HP	280	
										HP	300	
		0.80m										
		U50								HP	400	
		1.00m		1.0			1.00m					
				1.5		CL	Sandy CLAY / Clayey SAND - low plasticity, dark brown to orange-brown and grey, fine grained sand.	M < w_P	H			
				2.0			2.40m					
				2.5			Hole Terminated at 2.40 m Very slow progress					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP11
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	M				TOPSOIL
							0.15m					RESIDUAL SOIL
							Sandy CLAY - medium to high plasticity, dark grey and orange-brown, fine grained sand.	M ~ w_P - M > w_P	VSt	HP	280	
		0.50m		0.5						HP	210	
										HP	280	
										HP	310	
		B U50 0.68m				CH				HP	300	
										HP	390	
				1.0						HP	410	
		1.20m					Becoming pale grey and orange-brown.					
							1.20m					
		B 1.50m		1.5			Sandy CLAY / Clayey SAND - low to medium plasticity, orange-brown to brown and grey, fine grained sand.	M < w_P	H	HP	>600	
						CL						
				2.0			2.30m					
							Hole Terminated at 2.30 m Very slow progress					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP12
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	D - M				TOPSOIL
							0.15m					
							Sandy CLAY - medium plasticity, orange-brown to red-brown and brown, fine grained sand.			HP	>600	RESIDUAL SOIL
		0.50m		0.5						HP	>600	
		U50 0.75m				CH		$M < w_P$	H	HP	>600	
				1.0								
							1.40m					
				1.5		CL	Sandy CLAY / Clayey SAND - low to medium plasticity, orange-brown to red-brown and grey, fine grained sand.					
							1.60m					
							Hole Terminated at 1.60 m Very slow progress					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP13
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered	E 0.10m				SM	Clayey SAND - fine to medium grained, dark brown, with fine to medium grained gravel, sub-angular, trace silt, root affected.	M				TOPSOIL
							0.20m					
				0.5		CH	Sandy CLAY - medium to high plasticity, dark grey and orange-brown, fine grained sand.	M ~ w_P	VSt	HP HP	300 350	RESIDUAL SOIL
								M < w_P	H	HP	500	
							0.80m					
							0.90m Extremely Weathered SANDSTONE, breaks down into Clayey SAND - fine to medium grained, grey, with some orange-brown, trace fine to medium grained gravel (sandstone fragments), estimated very low to low strength.					EXTREMELY TO HIGHLY WEATHERED ROCK
				1.0			Hole Terminated at 0.90 m Practical Refusal					
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP14
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	D - M				TOPSOIL
							0.24m					
				0.5		CH	Sandy CLAY - medium plasticity, orange-brown, fine grained sand.	M < w_P	H	HP	>600	RESIDUAL SOIL
										HP	>600	
										HP	480	
										HP	>600	
				1.0			1.00m					
							1.05m SANDSTONE - fine to medium grained, brown and orange-brown, estimated medium to high strength.	M				HIGHLY WEATHERED ROCK
							Hole Terminated at 1.05 m Refusal					
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP15

CLIENT: LEND LEASE
PAGE: 1 OF 1

PROJECT: PROPOSED EXPANSION
JOB NO: NEW16P-0119

LOGGED BY: BE

LOCATION: CESSNOCK CORRECTIONAL CENTRE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
SURFACE RL:

TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	D - M				TOPSOIL
							0.25m					
							Sandy CLAY - medium plasticity, orange-brown, fine grained sand.					RESIDUAL SOIL
				0.5								
				1.0								
E	Not Encountered					CH	Becoming grey and orange-brown.	M < w_P	H			
				1.5								
				2.0								
							2.10m					
							Hole Terminated at 2.10 m Very slow progress					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP16
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	D - M				TOPSOIL
							0.30m					
				0.5			Sandy CLAY - medium plasticity, dark grey and orange-brown, fine grained sand.					RESIDUAL SOIL
		0.70m										
		U50		1.0		CH		M < w_P	H			
		1.10m					Becoming pale grey and orange-brown.					
				1.5								
				2.0			2.00m					
							Hole Terminated at 2.00 m Very slow progress					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP17
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	D - M				TOPSOIL
							0.20m					
		0.45m		0.5		CI	Sandy CLAY - medium plasticity, red-brown to orange-brown and grey, with fine to medium grained gravel, sub-rounded.			HP	>600	RESIDUAL SOIL / POSSIBLE FILL
		E 0.55m					0.55m					
		0.60m				CL	Sandy CLAY - low to medium plasticity, orange-brown and pale grey, with some red-brown, fine grained sand.			HP	>600	RESIDUAL SOIL
		U50						M < w_P	H			
		1.00m		1.0			1.00m					
							Extremely Weathered SANDSTONE, breaks down into Clayey SAND - fine to medium grained, yellow-brown with some pale grey, trace fine grained gravel (sandstone fragments), estimated very low strength.					EXTREMELY WEATHERED ROCK
							1.40m					
				1.5			Hole Terminated at 1.40 m Very slow progress					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP18
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	0.10m Silty SAND - fine to medium grained, grey, with fine to medium grained gravel, root affected.					TOPSOIL
		0.30m				CH	Sandy CLAY - medium to high plasticity, grey-brown and orange-brown, fine grained sand.			HP	>600	RESIDUAL SOIL / POSSIBLE FILL
		E 0.40m					0.40m			HP	>600	
		0.50m		0.5			Sandy CLAY - low to medium plasticity, orange-brown and pale grey, with some red-brown, fine grained sand.					RESIDUAL SOIL
		0.60m								HP	>600	
		U50 B 0.80m					Becoming pale orange and pale grey.	$M < w_P$	H			
		0.90m		1.0		CL						
				1.5			1.70m					
							1.80m Extremely Weathered SANDSTONE, breaks down into Clayey SAND - fine to medium grained, yellow-brown with some pale grey, trace fine grained gravel (sandstone fragments), estimated very low to low strength.	M				EXTREMELY TO HIGHLY WEATHERED ROCK
				2.0			Hole Terminated at 1.80 m Practical Refusal					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP19
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m		0.5		SM	0.10m FILL: Silty SAND - fine to medium grained, grey-brown, root affected.	M				TOPSOIL
						CI	FILL: Sandy CLAY - medium plasticity, red-brown and orange-brown.	M > w_P	VSt	HP	280	RESIDUAL SOIL / POSSIBLE FILL
										HP	280	
										HP	310	
						CL	0.70m Sandy CLAY / Clayey SAND - low to medium plasticity, orange-brown and grey, fine grained sand.	M ~ w_P	H	HP	480	RESIDUAL SOIL
				1.0			0.90m SANDSTONE, breaks down into Clayey SAND - fine to medium grained, yellow-brown with some pale grey, with fine to medium grained gravel (sandstone fragments), estimated very low to low strength. 1.00m	M				EXTREMELY TO HIGHLY WEATHERED ROCK
				1.5			Hole Terminated at 1.00 m Refusal					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP20
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	M				TOPSOIL
							0.25m					
		0.50m		0.5			Sandy CLAY - medium plasticity, orange-brown and dark grey, fine grained sand.			HP	500	RESIDUAL SOIL
										HP	550	
		U50								HP	500	
		0.75m				CI		$M < w_P$	H			
				1.0						HP	480	
							1.45m					
				1.5			1.50m SANDSTONE - fine to coarse grained, orange-brown to brown and grey, estimated low to medium strength.	M				HIGHLY WEATHERED ROCK
							Hole Terminated at 1.50 m Practical Refusal					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP21
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	D - M				TOPSOIL
							0.24m					
							Sandy CLAY - medium plasticity, orange-brown and dark grey, fine grained sand.			HP	>600	RESIDUAL SOIL
		0.50m		0.5						HP	>600	
		U50 0.68m										
				1.0		CI	Becoming red-brown to orange-brown and pale grey.	M < w_P	H	HP	>600	
				1.5			1.60m					
							Hole Terminated at 1.60 m Very slow progress					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP22
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered	E 0.10m 0.30m B 0.50m 0.60m U50 0.80m		0.5		SM CI	0.05m Silty SAND - fine to medium grained, grey-brown, root affected. Sandy CLAY - medium plasticity, orange-brown and red-brown, fine grained sand.	D - M M < w_P	H			TOPSOIL RESIDUAL SOIL
				1.0 1.5 2.0 2.5			0.80m 0.83m SANDSTONE - fine to coarse grained, brown and pale grey, estimated medium to high strength. Hole Terminated at 0.83 m Refusal	M				HIGHLY WEATHERED ROCK

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP23
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, root affected.	M				TOPSOIL
							0.14m					
		0.40m		0.5		CI	Sandy CLAY - medium plasticity, red-brown with some orange-brown and grey, fine grained sand.	M < w_P	H			RESIDUAL SOIL
		B U50 0.70m										
							0.75m					
							0.80m SANDSTONE - fine to medium grained, orange-brown and pale grey, estimated low strength.	M				EXTREMELY TO HIGHLY WEATHERED ROCK
				1.0			Hole Terminated at 0.80 m Refusal					
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP24
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered					SM	Sandy SILT - low plasticity, fine to medium grained, grey-brown, trace fine to medium gravel, sub-rounded to sub-angular, root affected.	D - M				TOPSOIL
							0.28m					
							Sandy CLAY - medium plasticity, red-brown with some orange-brown and grey, fine grained sand.			HP	>600	RESIDUAL SOIL
				0.5						HP	>600	
						CI		M < w_P	H			
				1.0						HP	>600	
							1.40m					
				1.5			SANDSTONE - fine to medium grained, orange-brown and pale grey, estimated low to medium strength.	M				HIGHLY WEATHERED ROCK
							1.50m Hole Terminated at 1.50 m Refusal					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP25
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty SAND - fine to medium grained, grey-brown, with fine to medium grained gravel, sub-rounded to sub-angular, root affected.	M				TOPSOIL
		0.30m					0.20m					
		B 0.50m		0.5		CI	Sandy CLAY - medium plasticity, red-brown with some orange-brown, fine grained sand.	M < w_P	H	HP	>600	RESIDUAL SOIL
										HP	>600	
				1.0			1.00m					
							SANDSTONE - fine to medium grained, orange-brown and pale grey, estimated medium strength.	M				HIGHLY WEATHERED ROCK
							1.10m					
							Hole Terminated at 1.10 m Refusal					
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP26
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: BE
DATE: 9/8/16

EQUIPMENT TYPE: CAT - 14 TONNE EXCAVATOR
TEST PIT LENGTH: 2.0 m **WIDTH:** 0.7 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	0.10m Silty SAND - fine to medium grained, grey-brown, root affected.					TOPSOIL
						SC	Clayey SAND - fine to medium grained, grey, with fine to medium grained, gravel, sub-rounded.	M	MD			SLOPE WASH
							0.30m Sandy CLAY - medium to high plasticity, grey-brown and orange, fine grained sand.	$M > w_P$	VSt	HP	280	RESIDUAL SOIL
				0.5						HP	300	
		0.60m								HP	360	
		B 0.90m					Becoming red-brown with some grey.			HP	580	
				1.0		CI		$M < w_P$ - M ~ w_P	H	HP	580	
										HP	>600	
				1.5			1.75m					
							1.80m SANDSTONE - fine to medium grained, orange-brown to red-brown and grey, estimated low strength to medium strength.	M				EXTREMELY TO HIGHLY WEATHERED ROCK
				2.0			Hole Terminated at 1.80 m Refusal					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP27
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: SJK
DATE: 25/8/16

EQUIPMENT TYPE: 5 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 0.5 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	0.10m Silty SAND - fine to coarse grained, brown to grey, fines of low plasticity, root affected.	M				TOPSOIL
		0.20m					CLAY - medium to high plasticity, pale brown, some fine to medium grained sand.					RESIDUAL SOIL
		CBR U50 0.50m		0.5		CH		M ~ w_P		HP	450	
										HP	600	
									H	HP	>600	
		1.00m		1.0			0.90m Extremely weathered Silty SANDSTONE with soil properties, breaks down into Sandy Clayey GRAVEL - fine to coarse grained, angular, pale grey and brown to grey, fines of medium plasticity, some highly weathered pockets.	M				EXTREMELY WEATHERED ROCK
		D 1.10m					1.30m					
							1.40m Silty SANDSTONE - fine to medium grained, pale brown and brown to grey, estimated low strength.	D				HIGHLY WEATHERED ROCK
				1.5			Hole Terminated at 1.40 m Practical Refusal					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP28
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: SJK
DATE: 25/8/16

EQUIPMENT TYPE: 5 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 0.5 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	Silty Gravelly SAND - fine to coarse grained, brown to pale brown, fine to medium grained sub-rounded gravel, fines of low plasticity, root affected.	M				TOPSOIL
							0.15m CLAY - medium to high plasticity, pale brown, with some brown to red and grey, some fine to medium grained sand.			HP	270	RESIDUAL SOIL
				0.5		CH		M > w_P	VSt	HP	270	
										HP	550	
				1.0			1.10m Sandy CLAY - medium to high plasticity, pale brown and pale grey, with some brown to red.			HP	450	
		1.20m D 1.50m		1.5		CH	Some highly weathered pockets.	M ~ w_P	H			
				2.0			2.10m					
							2.15m SANDSTONE - fine to coarse grained, brown, pale brown to orange and pale grey, estimated low to medium strength.	D - M				HIGHLY WEATHERED ROCK
							Hole Terminated at 2.15 m Refusal					
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP29
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: SJK
DATE: 25/8/16

EQUIPMENT TYPE: 5 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 0.5 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	0.10m Silty SAND - fine to coarse grained, brown to grey, fines of low plasticity, root affected.	D				TOPSOIL
						SM	0.20m Silty Gravelly SAND - fine to coarse grained, pale brown, fine to medium grained sub-rounded gravel, fines of low plasticity.					SLOPE WASH
		0.30m					CLAY - medium to high plasticity, pale brown, with some brown to red and grey, some fine to coarse grained sand.			HP	>600	RESIDUAL SOIL
		CBR 0.50m		0.5			Becoming brown to red, pale brown and grey.			HP	>600	
						CH		$M < w_P$	H			
				1.0						HP	>600	
							1.40m					
				1.5			1.50m SANDSTONE - fine to coarse grained, pale grey, pale brown to orange and brown to red, estimated low to medium strength.	D				HIGHLY WEATHERED ROCK
							Hole Terminated at 1.50 m Practical Refusal					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP30
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: SJK
DATE: 25/8/16

EQUIPMENT TYPE: 5 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 0.5 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	0.10m FILL: Silty SAND - fine to coarse grained, brown to grey, fines of low plasticity, trace fine to coarse grained sub-angular gravel, root affected.	M				FILL - TOPSOIL
		0.20m				SM	0.20m Silty SAND - mostly fine to medium grained, pale brown, fines of low plasticity.					SLOPE WASH
		E 0.30m					CLAY - medium to high plasticity, brown to red and pale brown, some fine to coarse grained sand.					RESIDUAL SOIL
		0.30m								HP	250	
		CBR 0.50m		0.5					VSt	HP	300	
		U50				CI		$M > w_P$		HP	>600	
		0.80m										
		0.90m							H			
		D 1.00m		1.0			1.05m					
							1.15m SANDSTONE - fine to coarse grained, pale grey, pale brown to orange and brown to red, estimated low to medium strength. 10 scrapes for 50mm with toothed excavator bucket.	D				HIGHLY WEATHERED ROCK
							Hole Terminated at 1.15 m Practical Refusal					
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP31
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: SJK
DATE: 25/8/16

EQUIPMENT TYPE: 5 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 0.5 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				GM	FILL: Silty Sandy GRAVEL - fine to coarse grained, grey to brown, fine to coarse grained sand, fines of low plasticity, some grass roots.	M				FILL - ACCESS TRACK EDGE
							0.15m CLAY - medium to high plasticity, pale brown, some fine to coarse grained sand.					RESIDUAL SOIL
		0.30m								HP	400	
		U50		0.5					VSt - H	HP	430	
		0.60m						$M > w_P$		HP	410	
				1.0		CH				HP	550	
							Becoming extremely weathered Sandstone.		H	HP	550	
				1.5			1.60m					
							SANDSTONE - fine to coarse grained, pale brown to orange, pale grey and grey to brown, estimated medium strength.					HIGHLY WEATHERED ROCK
							1.80m 10 scrapes for 90mm with toothed excavator bucket.					
							Hole Terminated at 1.80 m Practical Refusal					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP32
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: SJK
DATE: 25/8/16

EQUIPMENT TYPE: 5 TONNE EXCAVATOR
TEST PIT LENGTH: 1.2 m **WIDTH:** 0.5 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	E 0.10m				SM	FILL: Silty SAND - fine to medium grained, dark brown, trace brick and glass fragments, root affected.	M				FILL - TOPSOIL
							0.20m					
						CH	CLAY - medium to high plasticity, pale brown, some fine to coarse grained sand.	M ~ w_P				RESIDUAL SOIL
							0.30m Hole Terminated at 0.30 m					
				0.5								
				1.0								
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: LEND LEASE
PROJECT: PROPOSED EXPANSION
LOCATION: CESSNOCK CORRECTIONAL CENTRE

TEST PIT NO: TP33
PAGE: 1 OF 1
JOB NO: NEW16P-0119
LOGGED BY: SJK
DATE: 25/8/16

EQUIPMENT TYPE: 5 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 0.5 m
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	E 0.10m				SM	0.10m Silty SAND - mostly fine to medium grained, grey to brown, fines of low plasticity, root affected.	M				TOPSOIL
		0.30m				CH	CLAY - medium to high plasticity, brown to red and pale brown, some fine to medium sand.	M < w_P	H	HP	550	RESIDUAL SOIL
		U50 0.60m		0.5						HP	>600	
		0.90m					0.80m			HP	>600	
		D 1.00m		1.0		GC	Extremely weatthered SANDSTONE with soil properties, breaks down into Sandy Clayey GRAVEL - fine to coarse grained, angular, pale brown, pale grey and brown to grey, fines of medium plasticity, some highly weathered pockets.	M				EXTREMELY WEATHERED ROCK
							1.10m Silty SANDSTONE - mostly fine to medium grained, grey to brown, pale brown to orange and pale grey to white, estimated low to medium strength.	D - M				HIGHLY WEATHERED ROCK
							1.40m					
				1.5			Hole Terminated at 1.40 m Slow progress					
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Project:	Cessnock Correctional Centre	Project No:	NEW16P - 0119
Location:	Cessnock	Field Staff:	Ben Edwards/Libby Betz
Date:	9/08/2016 and 24/08/16 - 25/08/16	Weather:	Fine / Sunny

Sample ID	Description	PID
TP01 - 0.0-0.1	Gravelly SAND, Brown, No Odour	0
TP01 - 0.35-0.45	Sandy CLAY, Brown with mottled red, No odour	0.1
TP02 - 0.0-0.1	Sandy CLAY, Brown, No Odour	0
TP03 - 0.0-0.1	Gravelly SAND, Brown, No Odour	0.1
TP04 - 0.0-0.1	Gravelly SAND, Brown, No Odour	0.2
TP05 - 0.0-0.1	Silty SAND, Brown, No Odour	0.2
TP05 - 0.45-0.55	Sandy CLAY, Light Brown, No Odour	0.3
TP06 - 0.0-0.1	Gravelly SAND, Brown, No Odour	0.3
TP07 - 0.0-0.1	SAND, Brown, No Odour	0.1
TP07 - 0.4-0.5	Clayey SAND, Light Brown, No Odour	0.2
TP08 - 0.0-0.1	Sandy CLAY, Brown, No Odour	0.1
TP08 - 0.5-0.6	SAND, Light Brown, No Odour	0.2
TP09 - 0.0-0.1	Clayey SAND, Brown, No Odour	0
TP10 - 0.0-0.1	Clayey SAND, Brown, No Odour	0.2
TP12 - 0.0-0.1	Gravelly SAND, Brown, No Odour	0.2
TP13 - 0.0-0.1	Clayey SAND, Brown, No Odour	0
TP14 - 0.0-0.1	Silty SAND, Brown, No Odour	0
TP15 - 0.0-0.1	Silty SAND, Brown, No Odour	0
TP16 - 0.0-0.1	Silty SAND, Brown, No Odour	0
TP17 - 0.0-0.1	Silty SAND, Brown, No Odour	0
TP17 - 0.45-0.55	Sandy CLAY, Light Brown, No Odour	0.1
TP18 - 0.0-0.1	Clayey SAND, Light Brown, No Odour	0.1
TP18 - 0.3-0.4	Sandy CLAY, Light Brown, No Odour	0.1
TP20 - 0.0-0.1	Clayey SAND, Brown, No Odour	0

Sample ID	Description	PID
TP21 - 0.0-0.1	Silty SAND, Light Brown, No Odour	0
TP22 - 0.0-0.1	Gravelly SAND, Brown, No Odour	0
TP23 - 0.0-0.1	Clayey SAND, Light Brown, No Odour	0.1
TP24 - 0.0-0.1	Clayey SAND, Light Brown, No Odour	0
TP25 - 0.0-0.1	Clayey SAND, Light Brown, No Odour	0
TP26 - 0.0-0.1	Silty SAND, Brown, No Odour	0
TP27	Clayey SAND, Brown, No Odour	0.1
TP28	Silty SAND, Brown , No Odour	0
TP29	Silty SAND, Brown, No Odour	0
TP30	Silty SAND, Brown, No Odour	0.1
TP31	Gravelly SAND, Brown, No Odour	0.3
TP32	Clayey SAND, Brown, No Odour	0.6
TP33	Clayey SAND, Brown, No Odour	0
SP1	Sandy CLAY, Brown, No Odour	0
SP2	Sandy CLAY, Brown, No Odour	0
SP3	Clayey SAND, Brown, No Odour	0.2
SP4	Clayey SAND, Light Brown, No Odour	0.1
SP6	Clayey SAND, Brown, No Odour	0
SP7	Silty Gravelly SAND, Brown, No Odour	0
SP2 - 1	Gravelly SAND, Brown, No Odour	0.1
SP2 - 2	Gravelly SAND, Brown, No Odour	0.9
SP2 - 3	Gravelly SAND, Brown, No Odour, Root Affected	1.1
SP3 - 1	Gravelly SAND, Brown, No Odour	1.5
SP3 - 2	CLAY , Red with some White , No Odour	3.1
SP3 - 3	Gravelly SAND, Brown, No Odour	1.9
SP3 - 4	Gravelly SAND, Light Brown, No Odour	1.9
SP4 - 1	Gravelly SAND, Brown, No Odour	0.6
SP4 - 2	Gravelly SAND, Brown, No Odour, Root Affected	0.3

Sample ID	Description	PID
SP4 - 3	Gravelly SAND, Brown, No Odour	0.7
SP6 - 3	Gravelly SAND, Brown, No Odour	1.4
SP6 - 4	SAND with some Gravel, Brown, No Odour	0.9
SP6 - 5	Gravelly SAND, Brown, No Odour	1.8
SP6- 6	Gravelly SAND, Brown, No Odour	1.3
SP6 - 7	Gravelly SAND, Brown, No Odour	1.5
SP7 - 1	Gravelly SAND, Brown, No Odour, Root Affected	0.8
SP7 - 2	Gravelly SAND, Brown, No Odour	0.5
SP8 - 1	Clayey SAND with some Gravel, Brown, No Odour	0.9
SP8 - 2	Clayey SAND with some Gravel, Brown, No Odour	0.5
SP8 - 3	Clayey SAND with some Gravel, Brown, No Odour	0.4
SP8 - 4	Gravelly SAND, Light Brown, No Odour	0.2
SP8 - 5	Gravelly SAND, Light Brown, No Odour	0.3
SP9 - 1	Gravelly SAND, Light Brown, No Odour	0
SP9 - 2	Gravelly SAND, Light Brown, No Odour	0.3
SP9 - 3	Gravelly SAND, Light Brown, No Odour	0.5
SP9 - 4	Gravelly SAND, Brown, No Odour	0.7
SP9 - 5	Gravelly SAND, Brown, No Odour	1.4
SP9 - 6	Gravelly SAND, Brown, No Odour	0.9
SP10 - 1	Gravelly SAND, Light Brown, No Odour	0.7
SP10 - 2	Gravelly SAND, Brown, No Odour	0
SP10 - 3	Gravelly SAND, Light Brown, No Odour	1.7
SP10 - 4	Gravelly SAND, Brown, No Odour	0.8
SP10 - 5	Gravelly SAND, Light Brown, No Odour	0
SP10 - 6	Gravelly SAND, Brown, No Odour	0.1
SP10 - 7	Gravelly SAND, Brown, No Odour	0.7

APPENDIX G:

Laboratory Results

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	7/09/2016 11:44:51 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

SP1 - Zinc

General Statistics

Total Number of Observations	7	Number of Distinct Observations	7
		Number of Missing Observations	2
Minimum	27	Mean	253.3
Maximum	560	Median	120
SD	220.7	Std. Error of Mean	83.41
Coefficient of Variation	0.871	Skewness	0.424

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.838	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.298	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	415.4	95% Adjusted-CLT UCL (Chen-1995)	404.8
		95% Modified-t UCL (Johnson-1978)	417.6

Gamma GOF Test

A-D Test Statistic	0.46	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.261	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.318	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.219	k star (bias corrected MLE)	0.792
Theta hat (MLE)	207.9	Theta star (bias corrected MLE)	320
nu hat (MLE)	17.06	nu star (bias corrected)	11.08
MLE Mean (bias corrected)	253.3	MLE Sd (bias corrected)	284.7
		Approximate Chi Square Value (0.05)	4.628
Adjusted Level of Significance	0.0158	Adjusted Chi Square Value	3.455

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	606.4	95% Adjusted Gamma UCL (use when n<50)	812.4

56	**Lognormal GOF Test**											
57					Shapiro Wilk Test Statistic	0.907	**Shapiro Wilk Lognormal GOF Test**					
58					5% Shapiro Wilk Critical Value	0.803	Data appear Lognormal at 5% Significance Level					
59					Lilliefors Test Statistic	0.242	**Lilliefors Lognormal GOF Test**					
60					5% Lilliefors Critical Value	0.335	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64					Minimum of Logged Data	3.296	Mean of logged Data	5.071				
65					Maximum of Logged Data	6.328	SD of logged Data	1.143				
66												
67	**Assuming Lognormal Distribution**											
68					95% H-UCL	2081	90% Chebyshev (MVUE) UCL	618.4				
69					95% Chebyshev (MVUE) UCL	776.4	97.5% Chebyshev (MVUE) UCL	995.7				
70					99% Chebyshev (MVUE) UCL	1427						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76					95% CLT UCL	390.5	95% Jackknife UCL	415.4				
77					95% Standard Bootstrap UCL	381.8	95% Bootstrap-t UCL	441.1				
78					95% Hall's Bootstrap UCL	341.1	95% Percentile Bootstrap UCL	384.3				
79					95% BCA Bootstrap UCL	378						
80					90% Chebyshev(Mean, Sd) UCL	503.5	95% Chebyshev(Mean, Sd) UCL	616.9				
81					97.5% Chebyshev(Mean, Sd) UCL	774.2	99% Chebyshev(Mean, Sd) UCL	1083				
82												
83	**Suggested UCL to Use**											
84					95% Student's-t UCL	415.4						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91												
92	**SP3 - Zinc**											
93												
94	**General Statistics**											
95					Total Number of Observations	5	Number of Distinct Observations	5				
96							Number of Missing Observations	2				
97					Minimum	21	Mean	308.2				
98					Maximum	530	Median	410				
99					SD	220.2	Std. Error of Mean	98.46				
100					Coefficient of Variation	0.714	Skewness	-0.567				
101												
102	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
103	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
104	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
105	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
106												
107	**Normal GOF Test**											
108					Shapiro Wilk Test Statistic	0.89	**Shapiro Wilk GOF Test**					
109					5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level					
110					Lilliefors Test Statistic	0.278	**Lilliefors GOF Test**					

111				5% Lilliefors Critical Value		0.396		Data appear Normal at 5% Significance Level				
112	**Data appear Normal at 5% Significance Level**											
113												
114	**Assuming Normal Distribution**											
115	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
116				95% Student's-t UCL		518.1				95% Adjusted-CLT UCL (Chen-1995)		443.5
117										95% Modified-t UCL (Johnson-1978)		513.9
118												
119	**Gamma GOF Test**											
120				A-D Test Statistic		0.509	**Anderson-Darling Gamma GOF Test**					
121				5% A-D Critical Value		0.689	Detected data appear Gamma Distributed at 5% Significance Level					
122				K-S Test Statistic		0.335	**Kolmogrov-Smirnoff Gamma GOF Test**					
123				5% K-S Critical Value		0.363	Detected data appear Gamma Distributed at 5% Significance Level					
124	**Detected data appear Gamma Distributed at 5% Significance Level**											
125												
126	**Gamma Statistics**											
127				k hat (MLE)		1.206				k star (bias corrected MLE)		0.616
128				Theta hat (MLE)		255.5				Theta star (bias corrected MLE)		500.5
129				nu hat (MLE)		12.06				nu star (bias corrected)		6.158
130				MLE Mean (bias corrected)		308.2				MLE Sd (bias corrected)		392.7
131										Approximate Chi Square Value (0.05)		1.721
132				Adjusted Level of Significance		0.0086				Adjusted Chi Square Value		0.888
133												
134	**Assuming Gamma Distribution**											
135	95% Approximate Gamma UCL (use when n>=50))					1103				95% Adjusted Gamma UCL (use when n<50)		2137
136												
137	**Lognormal GOF Test**											
138				Shapiro Wilk Test Statistic		0.81	**Shapiro Wilk Lognormal GOF Test**					
139				5% Shapiro Wilk Critical Value		0.762	Data appear Lognormal at 5% Significance Level					
140				Lilliefors Test Statistic		0.311	**Lilliefors Lognormal GOF Test**					
141				5% Lilliefors Critical Value		0.396	Data appear Lognormal at 5% Significance Level					
142	**Data appear Lognormal at 5% Significance Level**											
143												
144	**Lognormal Statistics**											
145				Minimum of Logged Data		3.045				Mean of logged Data		5.262
146				Maximum of Logged Data		6.273				SD of logged Data		1.358
147												
148	**Assuming Lognormal Distribution**											
149				95% H-UCL		39671				90% Chebyshev (MVUE) UCL		1003
150				95% Chebyshev (MVUE) UCL		1288				97.5% Chebyshev (MVUE) UCL		1682
151				99% Chebyshev (MVUE) UCL		2458						
152												
153	**Nonparametric Distribution Free UCL Statistics**											
154	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
155												
156	**Nonparametric Distribution Free UCLs**											
157				95% CLT UCL		470.2				95% Jackknife UCL		518.1
158				95% Standard Bootstrap UCL		454				95% Bootstrap-t UCL		492.7
159				95% Hall's Bootstrap UCL		397.6				95% Percentile Bootstrap UCL		458
160				95% BCA Bootstrap UCL		434						
161				90% Chebyshev(Mean, Sd) UCL		603.6				95% Chebyshev(Mean, Sd) UCL		737.4
162				97.5% Chebyshev(Mean, Sd) UCL		923.1				99% Chebyshev(Mean, Sd) UCL		1288
163												
164	**Suggested UCL to Use**											
165				95% Student's-t UCL		518.1						

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SP4 - Zinc

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	2
Minimum	26	Mean	177.8
Maximum	620	Median	32.5
SD	294.9	Std. Error of Mean	147.4
Coefficient of Variation	1.659	Skewness	1.998

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.644	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.433	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	524.7	95% Adjusted-CLT UCL (Chen-1995)	577.7
		95% Modified-t UCL (Johnson-1978)	549.3

Gamma GOF Test

A-D Test Statistic	0.82	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.677	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.445	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.408	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.604	k star (bias corrected MLE)	0.318
Theta hat (MLE)	294.5	Theta star (bias corrected MLE)	559.7
nu hat (MLE)	4.829	nu star (bias corrected)	2.541
MLE Mean (bias corrected)	177.8	MLE Sd (bias corrected)	315.4
		Approximate Chi Square Value (0.05)	0.25
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1803	95% Adjusted Gamma UCL (use when n<50)	N/A

221	**Lognormal GOF Test**											
222					Shapiro Wilk Test Statistic	0.713	**Shapiro Wilk Lognormal GOF Test**					
223					5% Shapiro Wilk Critical Value	0.748	Data Not Lognormal at 5% Significance Level					
224					Lilliefors Test Statistic	0.39	**Lilliefors Lognormal GOF Test**					
225					5% Lilliefors Critical Value	0.443	Data appear Lognormal at 5% Significance Level					
226	**Data appear Approximate Lognormal at 5% Significance Level**											
227												
228	**Lognormal Statistics**											
229					Minimum of Logged Data	3.258	Mean of logged Data	4.158				
230					Maximum of Logged Data	6.43	SD of logged Data	1.522				
231												
232	**Assuming Lognormal Distribution**											
233					95% H-UCL	1356665	90% Chebyshev (MVUE) UCL	399.1				
234					95% Chebyshev (MVUE) UCL	518.4	97.5% Chebyshev (MVUE) UCL	683.9				
235					99% Chebyshev (MVUE) UCL	1009						
236												
237	**Nonparametric Distribution Free UCL Statistics**											
238	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
239												
240	**Nonparametric Distribution Free UCLs**											
241					95% CLT UCL	420.3	95% Jackknife UCL	524.7				
242					95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A				
243					95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A				
244					95% BCA Bootstrap UCL	N/A						
245					90% Chebyshev(Mean, Sd) UCL	620.1	95% Chebyshev(Mean, Sd) UCL	820.4				
246					97.5% Chebyshev(Mean, Sd) UCL	1098	99% Chebyshev(Mean, Sd) UCL	1645				
247												
248	**Suggested UCL to Use**											
249					95% Student's-t UCL	524.7						
250												
251	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
252	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
253	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
254	For additional insight the user may want to consult a statistician.											
255												
256												
257	**SP5 - Zinc**											
258												
259	**General Statistics**											
260					Total Number of Observations	11	Number of Distinct Observations	11				
261							Number of Missing Observations	2				
262					Minimum	22	Mean	87.36				
263					Maximum	300	Median	50				
264					SD	99.45	Std. Error of Mean	29.99				
265					Coefficient of Variation	1.138	Skewness	1.812				
266												
267	**Normal GOF Test**											
268					Shapiro Wilk Test Statistic	0.652	**Shapiro Wilk GOF Test**					
269					5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level					
270					Lilliefors Test Statistic	0.352	**Lilliefors GOF Test**					
271					5% Lilliefors Critical Value	0.267	Data Not Normal at 5% Significance Level					
272	**Data Not Normal at 5% Significance Level**											
273												
274	**Assuming Normal Distribution**											
275	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					

276				95% Student's-t UCL	141.7				95% Adjusted-CLT UCL (Chen-1995)			154.2
277									95% Modified-t UCL (Johnson-1978)			144.4
278												
279					**Gamma GOF Test**							
280				A-D Test Statistic	1.039				**Anderson-Darling Gamma GOF Test**			
281				5% A-D Critical Value	0.746				Data Not Gamma Distributed at 5% Significance Level			
282				K-S Test Statistic	0.261				**Kolmogrov-Smirnoff Gamma GOF Test**			
283				5% K-S Critical Value	0.261				Data Not Gamma Distributed at 5% Significance Level			
284					**Data Not Gamma Distributed at 5% Significance Level**							
285												
286					**Gamma Statistics**							
287				k hat (MLE)	1.308				k star (bias corrected MLE)			1.012
288				Theta hat (MLE)	66.8				Theta star (bias corrected MLE)			86.35
289				nu hat (MLE)	28.77				nu star (bias corrected)			22.26
290				MLE Mean (bias corrected)	87.36				MLE Sd (bias corrected)			86.85
291									Approximate Chi Square Value (0.05)			12.53
292				Adjusted Level of Significance	0.0278				Adjusted Chi Square Value			11.36
293												
294					**Assuming Gamma Distribution**							
295				95% Approximate Gamma UCL (use when n>=50))	155.2				95% Adjusted Gamma UCL (use when n<50)			171.2
296												
297					**Lognormal GOF Test**							
298				Shapiro Wilk Test Statistic	0.862				**Shapiro Wilk Lognormal GOF Test**			
299				5% Shapiro Wilk Critical Value	0.85				Data appear Lognormal at 5% Significance Level			
300				Lilliefors Test Statistic	0.196				**Lilliefors Lognormal GOF Test**			
301				5% Lilliefors Critical Value	0.267				Data appear Lognormal at 5% Significance Level			
302					**Data appear Lognormal at 5% Significance Level**							
303												
304					**Lognormal Statistics**							
305				Minimum of Logged Data	3.091				Mean of logged Data			4.041
306				Maximum of Logged Data	5.704				SD of logged Data			0.891
307												
308					**Assuming Lognormal Distribution**							
309				95% H-UCL	185.8				90% Chebyshev (MVUE) UCL			149.3
310				95% Chebyshev (MVUE) UCL	180.3				97.5% Chebyshev (MVUE) UCL			223.3
311				99% Chebyshev (MVUE) UCL	307.9							
312												
313					**Nonparametric Distribution Free UCL Statistics**							
314					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
315												
316					**Nonparametric Distribution Free UCLs**							
317				95% CLT UCL	136.7				95% Jackknife UCL			141.7
318				95% Standard Bootstrap UCL	133.9				95% Bootstrap-t UCL			329.2
319				95% Hall's Bootstrap UCL	458.8				95% Percentile Bootstrap UCL			137.6
320				95% BCA Bootstrap UCL	152.6							
321				90% Chebyshev(Mean, Sd) UCL	177.3				95% Chebyshev(Mean, Sd) UCL			218.1
322				97.5% Chebyshev(Mean, Sd) UCL	274.6				99% Chebyshev(Mean, Sd) UCL			385.7
323												
324					**Suggested UCL to Use**							
325				95% H-UCL	185.8							
326												
327	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
328	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
329	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
330	For additional insight the user may want to consult a statistician.											

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.				
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.				
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.				
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.				
SP5 - Nickel				
General Statistics				
Total Number of Observations	11	Number of Distinct Observations	9	
		Number of Missing Observations	2	
Minimum	2.5	Mean	10.08	
Maximum	36	Median	6.2	
SD	9.721	Std. Error of Mean	2.931	
Coefficient of Variation	0.964	Skewness	2.146	
Normal GOF Test				
Shapiro Wilk Test Statistic	0.754	**Shapiro Wilk GOF Test**		
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.218	**Lilliefors GOF Test**		
5% Lilliefors Critical Value	0.267	Data appear Normal at 5% Significance Level		
Data appear Approximate Normal at 5% Significance Level				
Assuming Normal Distribution				
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**		
95% Student's-t UCL	15.39	95% Adjusted-CLT UCL (Chen-1995)	16.93	
		95% Modified-t UCL (Johnson-1978)	15.71	
Gamma GOF Test				
A-D Test Statistic	0.396	**Anderson-Darling Gamma GOF Test**		
5% A-D Critical Value	0.742	Detected data appear Gamma Distributed at 5% Significance Level		
K-S Test Statistic	0.162	**Kolmogrov-Smirnoff Gamma GOF Test**		
5% K-S Critical Value	0.259	Detected data appear Gamma Distributed at 5% Significance Level		
Detected data appear Gamma Distributed at 5% Significance Level				
Gamma Statistics				
k hat (MLE)	1.606	k star (bias corrected MLE)	1.229	
Theta hat (MLE)	6.277	Theta star (bias corrected MLE)	8.205	
nu hat (MLE)	35.34	nu star (bias corrected)	27.03	
MLE Mean (bias corrected)	10.08	MLE Sd (bias corrected)	9.095	
		Approximate Chi Square Value (0.05)	16.18	
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	14.82	
Assuming Gamma Distribution				
95% Approximate Gamma UCL (use when n>=50))	16.85	95% Adjusted Gamma UCL (use when n<50)	18.39	
Lognormal GOF Test				
Shapiro Wilk Test Statistic	0.931	**Shapiro Wilk Lognormal GOF Test**		
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level		
Lilliefors Test Statistic	0.163	**Lilliefors Lognormal GOF Test**		
5% Lilliefors Critical Value	0.267	Data appear Lognormal at 5% Significance Level		
Data appear Lognormal at 5% Significance Level				
Lognormal Statistics				

386	Minimum of Logged Data				0.916	Mean of logged Data					1.968	
387	Maximum of Logged Data				3.584	SD of logged Data					0.856	
388												
389	**Assuming Lognormal Distribution**											
390	95% H-UCL				21.64	90% Chebyshev (MVUE) UCL					17.95	
391	95% Chebyshev (MVUE) UCL				21.6	97.5% Chebyshev (MVUE) UCL					26.66	
392	99% Chebyshev (MVUE) UCL				36.6							
393												
394	**Nonparametric Distribution Free UCL Statistics**											
395	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
396												
397	**Nonparametric Distribution Free UCLs**											
398	95% CLT UCL				14.9	95% Jackknife UCL					15.39	
399	95% Standard Bootstrap UCL				14.74	95% Bootstrap-t UCL					20.05	
400	95% Hall's Bootstrap UCL				35.25	95% Percentile Bootstrap UCL					15.15	
401	95% BCA Bootstrap UCL				16.85							
402	90% Chebyshev(Mean, Sd) UCL				18.87	95% Chebyshev(Mean, Sd) UCL					22.86	
403	97.5% Chebyshev(Mean, Sd) UCL				28.39	99% Chebyshev(Mean, Sd) UCL					39.24	
404												
405	**Suggested UCL to Use**											
406	95% Student's-t UCL				15.39							
407												
408	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
409	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
410	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
411	For additional insight the user may want to consult a statistician.											
412												
413												
414	**SP10 - Nickel**											
415												
416	**General Statistics**											
417	Total Number of Observations				7	Number of Distinct Observations					7	
418						Number of Missing Observations					2	
419	Minimum				5.5	Mean					17.99	
420	Maximum				38	Median					12	
421	SD				13.05	Std. Error of Mean					4.934	
422	Coefficient of Variation				0.726	Skewness					0.877	
423												
424	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
425	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
426	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
427	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
428												
429	**Normal GOF Test**											
430	Shapiro Wilk Test Statistic				0.846	**Shapiro Wilk GOF Test**						
431	5% Shapiro Wilk Critical Value				0.803	Data appear Normal at 5% Significance Level						
432	Lilliefors Test Statistic				0.248	**Lilliefors GOF Test**						
433	5% Lilliefors Critical Value				0.335	Data appear Normal at 5% Significance Level						
434	**Data appear Normal at 5% Significance Level**											
435												
436	**Assuming Normal Distribution**											
437	**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**						
438	95% Student's-t UCL				27.57	95% Adjusted-CLT UCL (Chen-1995)					27.85	
439						95% Modified-t UCL (Johnson-1978)					27.85	
440												

	A	B	C	D	E	F	G	H	I	J	K	L
441	**Gamma GOF Test**											
442	A-D Test Statistic					0.393	**Anderson-Darling Gamma GOF Test**					
443	5% A-D Critical Value					0.714	Detected data appear Gamma Distributed at 5% Significance Level					
444	K-S Test Statistic					0.21	**Kolmogrov-Smirnoff Gamma GOF Test**					
445	5% K-S Critical Value					0.315	Detected data appear Gamma Distributed at 5% Significance Level					
446	**Detected data appear Gamma Distributed at 5% Significance Level**											
447												
448	**Gamma Statistics**											
449	k hat (MLE)					2.337	k star (bias corrected MLE)					1.43
450	Theta hat (MLE)					7.697	Theta star (bias corrected MLE)					12.57
451	nu hat (MLE)					32.71	nu star (bias corrected)					20.03
452	MLE Mean (bias corrected)					17.99	MLE Sd (bias corrected)					15.04
453							Approximate Chi Square Value (0.05)					10.87
454	Adjusted Level of Significance					0.0158	Adjusted Chi Square Value					8.907
455												
456	**Assuming Gamma Distribution**											
457	95% Approximate Gamma UCL (use when n>=50))					33.13	95% Adjusted Gamma UCL (use when n<50)					40.44
458												
459	**Lognormal GOF Test**											
460	Shapiro Wilk Test Statistic					0.929	**Shapiro Wilk Lognormal GOF Test**					
461	5% Shapiro Wilk Critical Value					0.803	Data appear Lognormal at 5% Significance Level					
462	Lilliefors Test Statistic					0.17	**Lilliefors Lognormal GOF Test**					
463	5% Lilliefors Critical Value					0.335	Data appear Lognormal at 5% Significance Level					
464	**Data appear Lognormal at 5% Significance Level**											
465												
466	**Lognormal Statistics**											
467	Minimum of Logged Data					1.705	Mean of logged Data					2.661
468	Maximum of Logged Data					3.638	SD of logged Data					0.733
469												
470	**Assuming Lognormal Distribution**											
471	95% H-UCL					45.73	90% Chebyshev (MVUE) UCL					32.88
472	95% Chebyshev (MVUE) UCL					39.66	97.5% Chebyshev (MVUE) UCL					49.08
473	99% Chebyshev (MVUE) UCL					67.58						
474												
475	**Nonparametric Distribution Free UCL Statistics**											
476	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
477												
478	**Nonparametric Distribution Free UCLs**											
479	95% CLT UCL					26.1	95% Jackknife UCL					27.57
480	95% Standard Bootstrap UCL					25.52	95% Bootstrap-t UCL					39.54
481	95% Hall's Bootstrap UCL					33.34	95% Percentile Bootstrap UCL					25.83
482	95% BCA Bootstrap UCL					26.79						
483	90% Chebyshev(Mean, Sd) UCL					32.79	95% Chebyshev(Mean, Sd) UCL					39.49
484	97.5% Chebyshev(Mean, Sd) UCL					48.8	99% Chebyshev(Mean, Sd) UCL					67.07
485												
486	**Suggested UCL to Use**											
487	95% Student's-t UCL					27.57						
488												
489	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
490	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
491	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
492	For additional insight the user may want to consult a statistician.											
493												
494												
495	**TP and SS - TRHC16-C34**											

496												
497	**General Statistics**											
498					Total Number of Observations	39				Number of Distinct Observations		5
499										Number of Missing Observations		1
500					Minimum	50				Mean		75.13
501					Maximum	460				Median		50
502					SD	84.29				Std. Error of Mean		13.5
503					Coefficient of Variation	1.122				Skewness		3.861
504												
505	**Normal GOF Test**											
506					Shapiro Wilk Test Statistic	0.348	**Shapiro Wilk GOF Test**					
507					5% Shapiro Wilk Critical Value	0.939	Data Not Normal at 5% Significance Level					
508					Lilliefors Test Statistic	0.489	**Lilliefors GOF Test**					
509					5% Lilliefors Critical Value	0.142	Data Not Normal at 5% Significance Level					
510	**Data Not Normal at 5% Significance Level**											
511												
512	**Assuming Normal Distribution**											
513	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
514					95% Student's-t UCL	97.88				95% Adjusted-CLT UCL (Chen-1995)		106.2
515										95% Modified-t UCL (Johnson-1978)		99.27
516												
517	**Gamma GOF Test**											
518					A-D Test Statistic	11.32	**Anderson-Darling Gamma GOF Test**					
519					5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level					
520					K-S Test Statistic	0.513	**Kolmogrov-Smirnoff Gamma GOF Test**					
521					5% K-S Critical Value	0.143	Data Not Gamma Distributed at 5% Significance Level					
522	**Data Not Gamma Distributed at 5% Significance Level**											
523												
524	**Gamma Statistics**											
525					k hat (MLE)	2.369				k star (bias corrected MLE)		2.204
526					Theta hat (MLE)	31.71				Theta star (bias corrected MLE)		34.09
527					nu hat (MLE)	184.8				nu star (bias corrected)		171.9
528					MLE Mean (bias corrected)	75.13				MLE Sd (bias corrected)		50.61
529										Approximate Chi Square Value (0.05)		142.6
530					Adjusted Level of Significance	0.0437				Adjusted Chi Square Value		141.5
531												
532	**Assuming Gamma Distribution**											
533					95% Approximate Gamma UCL (use when n>=50))	90.58				95% Adjusted Gamma UCL (use when n<50)		91.25
534												
535	**Lognormal GOF Test**											
536					Shapiro Wilk Test Statistic	0.401	**Shapiro Wilk Lognormal GOF Test**					
537					5% Shapiro Wilk Critical Value	0.939	Data Not Lognormal at 5% Significance Level					
538					Lilliefors Test Statistic	0.507	**Lilliefors Lognormal GOF Test**					
539					5% Lilliefors Critical Value	0.142	Data Not Lognormal at 5% Significance Level					
540	**Data Not Lognormal at 5% Significance Level**											
541												
542	**Lognormal Statistics**											
543					Minimum of Logged Data	3.912				Mean of logged Data		4.094
544					Maximum of Logged Data	6.131				SD of logged Data		0.526
545												
546	**Assuming Lognormal Distribution**											
547					95% H-UCL	81.26				90% Chebyshev (MVUE) UCL		86.84
548					95% Chebyshev (MVUE) UCL	95.11				97.5% Chebyshev (MVUE) UCL		106.6
549					99% Chebyshev (MVUE) UCL	129.1						
550												

	A	B	C	D	E	F	G	H	I	J	K	L
551	**Nonparametric Distribution Free UCL Statistics**											
552	**Data do not follow a Discernible Distribution (0.05)**											
553												
554	**Nonparametric Distribution Free UCLs**											
555					95% CLT UCL	97.33			95% Jackknife UCL			97.88
556					95% Standard Bootstrap UCL	96.73			95% Bootstrap-t UCL			150.4
557					95% Hall's Bootstrap UCL	176.7			95% Percentile Bootstrap UCL			99.49
558					95% BCA Bootstrap UCL	108.2						
559					90% Chebyshev(Mean, Sd) UCL	115.6			95% Chebyshev(Mean, Sd) UCL			134
560					97.5% Chebyshev(Mean, Sd) UCL	159.4			99% Chebyshev(Mean, Sd) UCL			209.4
561												
562	**Suggested UCL to Use**											
563					95% Chebyshev (Mean, Sd) UCL	134						
564												
565	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
566	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
567	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
568	For additional insight the user may want to consult a statistician.											
569												

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	7/09/2016 11:47:04 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

SP10 - TRHC16-C34

General Statistics

Total Number of Observations	7	Number of Distinct Observations	3
		Number of Missing Observations	2
Number of Detects	2	Number of Non-Detects	5
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	180	Minimum Non-Detect	100
Maximum Detect	640	Maximum Non-Detect	100
Variance Detects	105800	Percent Non-Detects	71.43%
Mean Detects	410	SD Detects	325.3
Median Detects	410	CV Detects	0.793
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	5.827	SD of Logged Detects	0.897

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	188.6	Standard Error of Mean	99.61
SD	186.4	95% KM (BCA) UCL	N/A
95% KM (t) UCL	382.1	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	352.4	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	487.4	95% KM Chebyshev UCL	622.8
97.5% KM Chebyshev UCL	810.6	99% KM Chebyshev UCL	1180

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	2.802	k star (bias corrected MLE)	N/A
Theta hat (MLE)	146.3	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	11.21	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.024	nu hat (KM)	14.34

56											Adjusted Level of Significance (β)	0.0158
57					Approximate Chi Square Value (14.34, α)	6.802					Adjusted Chi Square Value (14.34, β)	5.316
58					95% Gamma Approximate KM-UCL (use when n>=50)	397.4					95% Gamma Adjusted KM-UCL (use when n<50)	508.6
59												
60					**Lognormal GOF Test on Detected Observations Only**							
61					**Not Enough Data to Perform GOF Test**							
62												
63					**Lognormal ROS Statistics Using Imputed Non-Detects**							
64					Mean in Original Scale	123.8					Mean in Log Scale	2.672
65					SD in Original Scale	236.5					SD in Log Scale	2.558
66					95% t UCL (assumes normality of ROS data)	297.5					95% Percentile Bootstrap UCL	278
67					95% BCA Bootstrap UCL	368.7					95% Bootstrap t UCL	2855
68					95% H-UCL (Log ROS)	2800822						
69												
70					**DL/2 Statistics**							
71					**DL/2 Normal**						**DL/2 Log-Transformed**	
72					Mean in Original Scale	152.9					Mean in Log Scale	4.459
73					SD in Original Scale	220.2					SD in Log Scale	1.004
74					95% t UCL (Assumes normality)	314.6					95% H-Stat UCL	653.6
75					**DL/2 is not a recommended method, provided for comparisons and historical reasons**							
76												
77					**Nonparametric Distribution Free UCL Statistics**							
78					**Data do not follow a Discernible Distribution at 5% Significance Level**							
79												
80					**Suggested UCL to Use**							
81					95% KM (t) UCL	382.1					95% KM (% Bootstrap) UCL	N/A
82					**Warning: One or more Recommended UCL(s) not available!**							
83												
84	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
85	Recommendations are based upon data size, data distribution, and skewness.											
86	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
87	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
88												

AU02_USR_LAB00020

From: Andrew Black
Sent: Monday, 22 August 2016 2:07 PM
To: AU02_USR_LAB00020
Subject: FW: Eurofins | mgt Test Results - Report 511607 : Site CESSNOCK CORRECTIONAL CENTRE (NEW16P-0119)

Additional silica gel analysis thanks guys

5 DAY TAT

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

-----Original Message-----
From: Libby Betz [mailto:LibbyBetz@qualtest.com.au]
Sent: Monday, 22 August 2016 2:03 PM
To: Andrew Black
Subject: RE: Eurofins | mgt Test Results - Report 511607 : Site CESSNOCK CORRECTIONAL CENTRE (NEW16P-0119)

Thanks Andrew.

Can I please have the following changes made to the report:

Please rename SP6 to SP6-1 and SP7 to SP6-2.

Also can I please have TP9_0.0-0.1 analysed for Silica Gel clean up?

- Au12272
GS901

Thanks

Libby Betz
Senior Environmental Scientist

Mob: +61 432189418
Tel: +61 2 4968 4468
Fax: +61 2 4960 9775
Web: www.qualtest.com.au
8 Ironbark Close, Warabrook, NSW, 2304
Libbybetz@qualtest.com.au

-----Original Message-----
From: AndrewBlack@eurofins.com [mailto:AndrewBlack@eurofins.com]
Sent: Monday, 22 August 2016 11:50 AM
To: Libby Betz <LibbyBetz@qualtest.com.au>
Subject: Eurofins | mgt Test Results - Report 511607 : Site CESSNOCK CORRECTIONAL CENTRE (NEW16P-0119)

Dear Libby,

LIAM
EF/MENT
22/8/16 2:07pm
512675

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Qualtest**
Contact name:	Libby Betz
Project name:	CESSNOCK CORRECTIONAL CENTRE
Project ID:	NEW16P-0119
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 22, 2016 2:07 PM
Eurofins | mgt reference:	**512675**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Libby Betz - libbybetz@qualtest.com.au.

eurofins | mgt

Certificate of Analysis

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Libby Betz**

Report **512675-S**
Project name CESSNOCK CORRECTIONAL CENTRE
Project ID NEW16P-0119
Received Date Aug 22, 2016

Client Sample ID			**TP9_0.0-0.1**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**M16-Au20449**
Date Sampled			**Aug 09, 2016**
Test/Reference	LOR	Unit	
TRH - 2013 NEPM Fractions (after silica gel clean-up)			
TRH >C10-C16 (after silica gel clean-up)	50	mg/kg	< 50
TRH >C16-C34 (after silica gel clean-up)	100	mg/kg	< 100
TRH >C34-C40 (after silica gel clean-up)	100	mg/kg	< 100
TRH - 1999 NEPM Fractions (after silica gel clean-up)			
TRH C10-C36 (Total) (after silica gel clean-up)	50	mg/kg	< 50
TRH C10-C14 (after silica gel clean-up)	20	mg/kg	< 20
TRH C15-C28 (after silica gel clean-up)	50	mg/kg	< 50
TRH C29-C36 (after silica gel clean-up)	50	mg/kg	< 50
% Moisture	1	%	21

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
TRH - 2013 NEPM Fractions (after silica gel clean-up)	Melbourne	Aug 23, 2016	14 Day
- Method: LM-LTM-ORG2010			
TRH - 1999 NEPM Fractions (after silica gel clean-up)	Melbourne	Aug 23, 2016	14 Day
- Method: TRH C6-C36 (Silica Gel Cleanup) - MGT 100A			
% Moisture	Melbourne	Aug 22, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Qualtest	**Order No.:**		**Received:**	Aug 22, 2016 2:07 PM
Address:	8 Ironbark Close Warabrook NSW 2304	**Report #:** **Phone:** **Fax:**	512675 02 4968 4468 02 4960 9775	**Due:** **Priority:** **Contact Name:**	Aug 29, 2016 5 Day Libby Betz
Project Name:	CESSNOCK CORRECTIONAL CENTRE				
Project ID:	NEW16P-0119				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						TRH (after Silica Gel cleanup)	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	TP9_0.0-0.1	Aug 09, 2016		Soil	M16-Au20449	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	mg/kg	< 50			50	Pass	
TRH >C16-C34 (after silica gel clean-up)	mg/kg	< 100			100	Pass	
TRH >C34-C40 (after silica gel clean-up)	mg/kg	< 100			100	Pass	
Method Blank							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	< 50			50	Pass	
TRH C10-C14 (after silica gel clean-up)	mg/kg	< 20			20	Pass	
TRH C15-C28 (after silica gel clean-up)	mg/kg	< 50			50	Pass	
TRH C29-C36 (after silica gel clean-up)	mg/kg	< 50			50	Pass	
LCS - % Recovery							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	%	109			70-130	Pass	
LCS - % Recovery							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C14 (after silica gel clean-up)	%	109			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
TRH - 2013 NEPM Fractions (after silica gel clean-up)				Result 1					
TRH >C10-C16 (after silica gel clean-up)	M16-Au10651	NCP	%	110			70-130	Pass	
Spike - % Recovery									
TRH - 1999 NEPM Fractions (after silica gel clean-up)				Result 1					
TRH C10-C14 (after silica gel clean-up)	M16-Au10651	NCP	%	109			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Au20449	CP	%	21	20	5.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Mele Singh	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

CHAIN OF CUSTODY RECORD

☐ Eurofins | mgt Sydney Lab ☐ Eurofins | mgt Brisbane Lab ☐ Eurofins | mgt Melbourne Lab

Company	Qualtest	Purchase Order		Project Manager	Libby Betz	Project Name	~~NEW16P-0119A~~ - Cessnock
Address	8 Ironbark Close Warabrook NSW 2304	Eurofins | mgt Quote №	160812QUAN	Project №	NEW16P-0119	Electronic Results Format	
Contact Name	Libby Betz					Email for Results	Libbybetz@qualtest.com.au
Contact Phone №	02 4968 4468					Turn Around Requirements	☒ 1 DAY* ☐ 2 DAY* ☐ 3 DAY* ☐ 5 DAY (Std) ☐ Other ( ) * Surcharges apply
Special Direction						Containers	
Relinquished by (Signature) (Time / Date)	[signature] __:__ 26/8/16					Method of Shipment	☐ Courier ☐ Hand Delivered ☐ Postal

№	Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Asbestos %w/w (NEPM)		10 Day TAT	Sample Comments / DG Hazard Warning
1	SP1-1	24.8	Soil	✓					✓		✓	
2	SP1-2	↓	↓	✓					✓		✓	
3	SP1-3			✓					✓		✓	
4	SP1-4			✓					✓		✓	
5	SP1-5			✓					✓		✓	
6	SP1-6			✓					✓		✓	
7	SP1-7			✓					✓		✓	
8	~~SP1-8~~ SP2-1			✓							✓	
9	SP2-2			✓							✓	
10	SP2-3			✓							✓	
11	SP3-1			✓							✓	
12	SP3-2	↓	↓	✓							✓	

Laboratory Use Only											
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature	
	Received By	SB	SYD | BNE | (MEL) | PER | ADL | NEW | DAR	Date	29/8/16	Time	8:28am	Signature	[signature]	Report №	513408

CHAIN OF CUSTODY RECORD

Qualtest	
8 Ironbark Close Warabrook NSW 2304	
Libby Betz	
02 4968 4468	
26/8/16	

	160812QUAN
	Libby Betz
	NEW16P-0119
	~~NEW16P-0140A~~ - Cessnock
	Libbybetz@qualtest.com.au

Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Asbestos %w/w - NEPM	10Day tat
SP3-3	24.8	soil	✓						✓
SP3-4	↓	↓	✓						✓
SP4-1	↓	↓	✓						✓
SP4-2	↓	↓	✓						✓
SP4-3	↓	↓	✓						✓
SP5-1	↓	↓	✓					✓	✓
SP5-2	↓	↓	✓					✓	✓
SP5-3	↓	↓	✓					✓	✓
SP5-4	↓	↓	✓					✓	✓
SP5-6	↓	↓	✓					✓	✓
SP5-7	↓	↓	✓					✓	✓
SP5-8	↓	↓	✓					✓	✓

Laboratory Use Only									
Received By		SYD | BNE | MEL | PER | ADL | NEY | DAR	Date	__/__/__	Time	__:__	Signature		Temperature
Received By		SYD | BNE | MEL | PER | ADL | NEY | DAR	Date	__/__/__	Time	__:__	Signature		Report No

CHAIN OF CUSTODY RECORD

Company	Qualtest
Address	8 Ironbark Close Warabrook NSW 2304
Contact Name	Libby Betz
Phone	02 4968 4468
Project	160812QUAN
Project Name	NEW16P-0119A
Email for Results	Libbybetz@qualtest.com.au

Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Asbestos %w/w -NEPM	1 Day TAT
SP5-5	24.8	Soil	/					/	/
SP5-9	↓	↓	/					/	/
SP5-10			/					/	/
SP6-3			/						/
SP6-4			/						/
SP6-5			/						/
SP6-7	↓		/						/
SP7-1	25.8		/						
SP7-2	↓		/						
SP8-1			/						
SP8-2			/						
SP8-3	↓		/						

Laboratory Use Only											
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature	
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Report No	

CHAIN OF CUSTODY RECORD

Company	Qualtest				Libby Betz
Address	8 Ironbark Close Warabrook NSW 2304		160812QUAN		NEW16P-0119
Contact Name	Libby Betz			Project Name	~~NEW16P-0119A~~ Cessnock
Contact Phone	02 4968 4468			Email for Results	Libbybetz@qualtest.com.au

Signature, 26/8/16

Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence
SP8-4	25-8	Soil	/				
SP8-5	↓	↓	/				
SP9-1	↓	↓	/				
SP9-2	↓	↓	/				
SP9-3	↓	↓	/				
SP9-4	↓	↓	/				
SP9-5	↓	↓	/				
SP9-6	↓	↓	/				
SP10-1	↓	↓	/				
SP10-2	↓	↓	/				
SP10-3	↓	↓	/				
SP10-4	↓	↓	/				

Laboratory Use Only										
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Report No

Pg 5 of 7

CHAIN OF CUSTODY RECORD

Company	Qualtest
Address	8 Ironbark Close Warabrook NSW 2304
Contact	Libby Betz
Phone	02 4968 4468
Signature / Date	[signature] 26/08/16

160812QUAN

Libby Betz

NEW16P-0119

NEW16P-0119A Cessnock

Libbybetz@qualtest.com.au

Sample ID	Eurofins mgt Suite: B7 TRH/BTEXN/PAH/As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Cool tav	Hold
SP10-5	/						
SP10-6	/						
SP10-7	/						
SP10-Asph						/	
SP5-Asph						/	
TP09-D1-0.0-0.1							/
TP09-D1-0.2-0.3							/
TP09-D2-0.0-0.1							/
TP09-D2-0.2-0.3							/
TP09-D3-0.0-0.0							/
TP09-D3-0.2-0.3							/
TP32-0.0-0.1	/						

Laboratory Use Only									
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Report No

CHAIN OF CUSTODY RECORD

Company	Qualtest
Address	8 Ironbark Close Warabrook NSW 2304
Contact	Libby Betz
Phone	02 4968 4468
Order No.	160812QUAN
Project Manager	L. Betz
Project No.	NEW16P-0119
Project Name	~~NEW16P-0119A~~ Cessnock,
Email for Results	Libbybetz@qualtest.com.au
Sampled by / Date	26/8/16

Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Oil and grease	Salinity (from EC)
WS1	24.8	water	/			/		/	/
WS2	25.8	water	/			/		/	/
TP27-0.0-0.1	25.8	soil	/						
TP28-0.0-0.1	↓	↓	/						
TP29-0.0-0.1	↓	↓	/						
TP30-0.0-0.1	↓	↓	/						
TP31-0.0-0.1	↓	↓	/						
TP33-0.0-0.1	↓	↓	/	/	/	/			
TP30-0.2-0.3	↓	↓	/						
QC8		↓	/						
QC10		↓	/						
QC12		↓	/						

Laboratory Use Only											
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature	
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Report No	

CHAIN OF CUSTODY RECORD

Qualtest		L.Betz	~~NEW16P-0119A~~ Cessnock
8 Ironbark Close Warabrook NSW 2304	160812QUAN		
Libby Betz			libbybetz@qualtest.com.au
02 4968 4468			
[signature] 27.8.16			

Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Suite B1	lead		5-26			1 Day TAT
QC14	25.8	soil	✓											
QC16	↓	water						✓						
SP54Frag	24.8	Frag					✓							✓
SP16Frag	↓	↓					✓							✓
SS1	25.8	soil	✓											
SS2	25.8	↓	✓											
SS3	↓	↓	✓											
Paint1	24.8	Frag							✓					✓
QC9											✓			
QC11											✓			
QC13											✓			
QC15											✓			

Send to ALS

Laboratory Use Only										
Received By		SYD | BNE | MEL | PER | ADL | NEY | DAR	Date	__/__/__	Time	__:__	Signature		Temperature	
Received By		SYD | BNE | MEL | PER | ADL | NEY | DAR	Date	__/__/__	Time	__:__	Signature		Report No	

QC17

CHAIN OF CUSTODY RECORD

Company	Qualtest	Project Manager	L.Betz
Address	8 Ironbark Close Warabrook NSW 2304	Project Name	~~NEW16P-0119A~~ Cessnock
Quote No	160812QUAN	Email for Results	Libbybetz@qualtest.com.au
Contact Name	Libby Betz		
Contact Phone No	02 4968 4468		
Signature	[signature] 27/8/16		

Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Suite B1	lead	5-26	1 Day TAT
QC14	25.8	SOU	/								
QC16	↓	water						/			
SP54 Frag	24.8	Frag					/				/
SP1b Frag	↓	↓					/				/
SS1	24.8	SOU	/								
SS2	25.8	↓	/								
SS3	↓	↓	/								
Paint 1	24.8	Frag							/		/
QC9										/	
QC11										/	
QC13										/	
QC15										/	

Send to ALS

COPY

Laboratory Use Only									
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Report No

QC17

AU02_USR_LAB00020

From: Andrew Black
Sent: Friday, 26 August 2016 4:18 PM
To: AU02_USR_LAB00020; Steven Borg; Tony Wong
Subject: FW: Updated COC - fast TAT
Attachments: NEW16P-0119.pdf

Importance: High

Follow Up Flag: Follow up
Flag Status: Flagged

Please see new instructions for some samples in this large job from Qualtest to be placed on a 1 day TAT.

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Libby Betz [mailto:LibbyBetz@qualtest.com.au]
Sent: Friday, 26 August 2016 4:12 PM
To: Andrew Black
Subject: Updated COC - fast TAT

Hi Andrew,

I have just talked to our client and they have requests fast TAT on some samples as part of this job.

Can I please have those marked in red on the attached COC analysed on 1 day TAT (50% surcharge). Please leave the remaining samples on standard 5 day.

Thanks,

Libby Betz
Senior Environmental Scientist

Qualtest
LABORATORY (NSW) PTY LTD

Mob: +61 432189418
Tel: +61 2 4968 4468
Fax: +61 2 4960 9775
Web: www.qualtest.com.au
8 Ironbark Close, Warabrook, NSW, 2304
Libbybetz@qualtest.com.au

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Qualtest**
Contact name:	Libby Betz
Project name:	CESSNOCK
Project ID:	NEW16P-0119
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	Aug 29, 2016 8:28 AM
Eurofins | mgt reference:	**513408**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

EXTRA SAMPLES SP6-6, SED 1 AND SED 2 RECEIVED PLACED ON HOLD. SAMPLE SP1-7 NOT RECEIVED

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Libby Betz - libbybetz@qualtest.com.au.

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

Attention:	Libby Betz
Report	513408-AID
Project Name	CESSNOCK
Project ID	NEW16P-0119
Received Date	Aug 29, 2016
Date Reported	Aug 30, 2016

Methodology:

Asbestos ID	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. Bulk samples include building materials, soils and ores.
Subsampling Soil Samples	The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30°C. The resultant material is then ground and examined in accordance with AS 4964-2004.
Limit of Reporting	The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, “Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise” therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.

Project Name CESSNOCK
Project ID NEW16P-0119
Date Sampled Aug 24, 2016
Report 513408-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
SP1-1	16-Au25463	Aug 24, 2016	Approximate Sample 548g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP1-2	16-Au25464	Aug 24, 2016	Approximate Sample 610g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP1-3	16-Au25465	Aug 24, 2016	Approximate Sample 449g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP1-4	16-Au25466	Aug 24, 2016	Approximate Sample 706g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP1-5	16-Au25467	Aug 24, 2016	Approximate Sample 585g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP1-6	16-Au25468	Aug 24, 2016	Approximate Sample 592g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-1	16-Au25480	Aug 24, 2016	Approximate Sample 522g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-2	16-Au25481	Aug 24, 2016	Approximate Sample 623g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-3	16-Au25482	Aug 24, 2016	Approximate Sample 507g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-4	16-Au25483	Aug 24, 2016	Approximate Sample 658g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
SP5-6	16-Au25484	Aug 24, 2016	Approximate Sample 591g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-7	16-Au25485	Aug 24, 2016	Approximate Sample 585g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-8	16-Au25486	Aug 24, 2016	Approximate Sample 487g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-5	16-Au25487	Aug 24, 2016	Approximate Sample 681g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-9	16-Au25488	Aug 24, 2016	Approximate Sample 613g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-10	16-Au25489	Aug 24, 2016	Approximate Sample 553g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
SP5-4 FRAG	16-Au25494	Aug 24, 2016	Approximate Sample 8g / 32x18x7mm Sample consisted of: Grey compressed fibre cement material	Chrysotile and amosite asbestos detected.
SP1-6 FRAG	16-Au25495	Aug 24, 2016	Approximate Sample 19g / 62x48x4mm Sample consisted of: Grey compressed fibre cement material	Chrysotile and amosite asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Aug 29, 2016	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Aug 29, 2016	Indefinite

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: CESSNOCK
Project ID: NEW16P-0119

Order No.:
Report #: 513408
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Aug 29, 2016 8:28 AM
Due: Aug 30, 2016
Priority: 1 Day
Contact Name: Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	SP1-1	Aug 24, 2016		Soil	M16-Au25463	X					X	X
2	SP1-2	Aug 24, 2016		Soil	M16-Au25464	X					X	X
3	SP1-3	Aug 24, 2016		Soil	M16-Au25465	X					X	X
4	SP1-4	Aug 24, 2016		Soil	M16-Au25466	X					X	X
5	SP1-5	Aug 24, 2016		Soil	M16-Au25467	X					X	X
6	SP1-6	Aug 24, 2016		Soil	M16-Au25468	X					X	X
7	SP1-7	Aug 24, 2016		Soil	M16-Au25469			X				
8	SP2-1	Aug 24, 2016		Soil	M16-Au25470						X	X
9	SP2-2	Aug 24, 2016		Soil	M16-Au25471						X	X
10	SP2-3	Aug 24, 2016		Soil	M16-Au25472						X	X

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: CESSNOCK
Project ID: NEW16P-0119

Order No.:
Report #: 513408
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Aug 29, 2016 8:28 AM
Due: Aug 30, 2016
Priority: 1 Day
Contact Name: Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
11	SP3-1	Aug 24, 2016		Soil	M16-Au25473						X	X
12	SP3-2	Aug 24, 2016		Soil	M16-Au25474						X	X
13	SP3-3	Aug 24, 2016		Soil	M16-Au25475						X	X
14	SP3-4	Aug 24, 2016		Soil	M16-Au25476						X	X
15	SP4-1	Aug 24, 2016		Soil	M16-Au25477						X	X
16	SP4-2	Aug 24, 2016		Soil	M16-Au25478						X	X
17	SP4-3	Aug 24, 2016		Soil	M16-Au25479						X	X
18	SP5-1	Aug 24, 2016		Soil	M16-Au25480	X					X	X
19	SP5-2	Aug 24, 2016		Soil	M16-Au25481	X					X	X
20	SP5-3	Aug 24, 2016		Soil	M16-Au25482	X					X	X
21	SP5-4	Aug 24, 2016		Soil	M16-Au25483	X					X	X
22	SP5-6	Aug 24, 2016		Soil	M16-Au25484	X					X	X

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NATA # 1261
Site # 1254 & 14271

Sydney
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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: CESSNOCK
Project ID: NEW16P-0119

Order No.:
Report #: 513408
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Aug 29, 2016 8:28 AM
Due: Aug 30, 2016
Priority: 1 Day
Contact Name: Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
23	SP5-7	Aug 24, 2016		Soil	M16-Au25485	X					X	X
24	SP5-8	Aug 24, 2016		Soil	M16-Au25486	X					X	X
25	SP5-5	Aug 24, 2016		Soil	M16-Au25487	X					X	X
26	SP5-9	Aug 24, 2016		Soil	M16-Au25488	X					X	X
27	SP5-10	Aug 24, 2016		Soil	M16-Au25489	X					X	X
28	SP6-3	Aug 24, 2016		Soil	M16-Au25490						X	X
29	SP6-4	Aug 24, 2016		Soil	M16-Au25491						X	X
30	SP6-5	Aug 24, 2016		Soil	M16-Au25492						X	X
31	SP6-7	Aug 24, 2016		Soil	M16-Au25493						X	X
32	SP5-4 FRAG	Aug 24, 2016		Other	M16-Au25494		X					
33	SP1-6 FRAG	Aug 24, 2016		Other	M16-Au25495		X					
34	PAINT 1	Aug 24, 2016		Paint	M16-Au25496					X		

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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Qualtest	**Order No.:**		**Received:**	Aug 29, 2016 8:28 AM
Address:	8 Ironbark Close Warabrook NSW 2304	**Report #:** **Phone:** **Fax:**	513408 02 4968 4468 02 4960 9775	**Due:** **Priority:** **Contact Name:**	Aug 30, 2016 1 Day Libby Betz
Project Name:	CESSNOCK				
Project ID:	NEW16P-0119				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
35	SP6-6	Aug 24, 2016		Soil	M16-Au25497				X			
36	SED 1	Aug 24, 2016		Soil	M16-Au25498				X			
37	SED 2	Aug 24, 2016		Soil	M16-Au25499				X			
Test Counts						16	2	1	3	1	30	30

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
COC	Chain of custody
SRA	Sample Receipt Advice
ISO	International Stardards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

Au25465, Au25486; Sample received was less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Au25465, Au25486; Sample received was less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Au25465, Au25486; Sample received was less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable
M11	NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

eurofins | mgt

Certificate of Analysis

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Libby Betz**

Report **513408-S**
Project name CESSNOCK
Project ID NEW16P-0119
Received Date Aug 29, 2016

Client Sample ID			**SP1-1**	**SP1-2**	**SP1-3**	**SP1-4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Au25463**	**M16-Au25464**	**M16-Au25465**	**M16-Au25466**
Date Sampled			**Aug 24, 2016**	**Aug 24, 2016**	**Aug 24, 2016**	**Aug 24, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	65	67	79	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SP1-1	SP1-2	SP1-3	SP1-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25463	M16-Au25464	M16-Au25465	M16-Au25466
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	92	115	112	104
p-Terphenyl-d14 (surr.)	1	%	93	119	111	106
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	11	8.8	9.7	9.4
Heavy Metals						
Arsenic	2	mg/kg	7.2	17	5.8	26
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	10	16	7.9	15
Copper	5	mg/kg	< 5	9.4	< 5	24
Lead	5	mg/kg	9.1	64	8.5	54
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	5.1	< 5	< 5	8.4
Zinc	5	mg/kg	110	120	27	450

Client Sample ID			SP1-5	SP1-6	SP2-1	SP2-2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25467	M16-Au25468	M16-Au25470	M16-Au25471
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	80	74	80	84
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			SP1-5	SP1-6	SP2-1	SP2-2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25467	M16-Au25468	M16-Au25470	M16-Au25471
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	119	120	115	106
p-Terphenyl-d14 (surr.)	1	%	130	118	121	112
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	8.4	8.3	12	19
Heavy Metals						
Arsenic	2	mg/kg	24	18	29	9.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.4
Chromium	5	mg/kg	17	22	19	12
Copper	5	mg/kg	31	5.7	30	< 5
Lead	5	mg/kg	40	15	61	7.8
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	9.3	6.2	5.3	6.7
Zinc	5	mg/kg	560	66	610	40

Client Sample ID			SP2-3	SP3-1	SP3-2	SP3-3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25472	M16-Au25473	M16-Au25474	M16-Au25475
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	60	52	64	55
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	118	120	117	102
p-Terphenyl-d14 (surr.)	1	%	123	129	122	106
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	14	12	14	14

Client Sample ID			SP2-3	SP3-1	SP3-2	SP3-3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25472	M16-Au25473	M16-Au25474	M16-Au25475
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	16	13	7.2	30
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	10	12	32
Copper	5	mg/kg	< 5	12	< 5	23
Lead	5	mg/kg	13	21	12	43
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.9	< 5	< 5	< 5
Zinc	5	mg/kg	44	130	21	410

Client Sample ID			SP3-4	SP4-1	SP4-2	SP4-3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25476	M16-Au25477	M16-Au25478	M16-Au25479
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	74	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	100	< 50	58
TRH C10-36 (Total)	50	mg/kg	< 50	174	< 50	58
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	50	56	57	55
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SP3-4	SP4-1	SP4-2	SP4-3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25476	M16-Au25477	M16-Au25478	M16-Au25479
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	94	125	98	114
p-Terphenyl-d14 (surr.)	1	%	133	104	84	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	19	8.1	10	11
Heavy Metals						
Arsenic	2	mg/kg	19	15	16	17
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	25	21	19	14
Copper	5	mg/kg	21	5.6	< 5	30
Lead	5	mg/kg	99	14	11	29
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.9	< 5	< 5	5.8
Zinc	5	mg/kg	530	37	26	620

Client Sample ID			SP5-1	SP5-2	SP5-3	SP5-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25480	M16-Au25481	M16-Au25482	M16-Au25483
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	80	< 50	70	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	73	< 50
TRH C10-36 (Total)	50	mg/kg	80	< 50	143	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	50	55	51	52
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			SP5-1	SP5-2	SP5-3	SP5-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25480	M16-Au25481	M16-Au25482	M16-Au25483
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102	84	92	99
p-Terphenyl-d14 (surr.)	1	%	88	135	85	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	15	13	15	10
Heavy Metals						
Arsenic	2	mg/kg	11	17	12	17
Cadmium	0.4	mg/kg	0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	14	24	21	22
Copper	5	mg/kg	< 5	< 5	9.5	25
Lead	5	mg/kg	12	15	22	36
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.2	< 5	< 5	13
Zinc	5	mg/kg	61	23	56	300

Client Sample ID			SP5-6	SP5-7	SP5-8	SP5-5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25484	M16-Au25485	M16-Au25486	M16-Au25487
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	62	64	50	56
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	99	111	102	130
p-Terphenyl-d14 (surr.)	1	%	96	114	87	118
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	14	15	14	10

Client Sample ID			SP5-6	SP5-7	SP5-8	SP5-5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25484	M16-Au25485	M16-Au25486	M16-Au25487
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	11	12	14	20
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	14	23	20
Copper	5	mg/kg	6.0	< 5	< 5	< 5
Lead	5	mg/kg	11	20	15	17
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.1	< 5	8.5	5.6
Zinc	5	mg/kg	50	22	30	33

Client Sample ID			SP5-9	SP5-10	SP6-3	SP6-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25488	M16-Au25489	M16-Au25490	M16-Au25491
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	55	51	58	53
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5

Client Sample ID			SP5-9	SP5-10	SP6-3	SP6-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25488	M16-Au25489	M16-Au25490	M16-Au25491
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	1.7	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	95	98	97	120
p-Terphenyl-d14 (surr.)	1	%	83	90	95	116
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	11	17	8.3	9.9
Heavy Metals						
Arsenic	2	mg/kg	8.0	11	13	10
Cadmium	0.4	mg/kg	0.6	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	28	17	18	18
Copper	5	mg/kg	24	8.3	11	< 5
Lead	5	mg/kg	9.8	22	23	9.9
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	36	12	12	9.3
Zinc	5	mg/kg	37	79	79	30

Client Sample ID			SP6-5	SP6-7	PAINT 1
Sample Matrix			Soil	Soil	Paint
Eurofins | mgt Sample No.			M16-Au25492	M16-Au25493	M16-Au25496
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	52	54	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-
TRH C6-C10	20	mg/kg	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-

Client Sample ID			SP6-5	SP6-7	PAINT 1
Sample Matrix			Soil	Soil	Paint
Eurofins | mgt Sample No.			M16-Au25492	M16-Au25493	M16-Au25496
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	88	116	-
p-Terphenyl-d14 (surr.)	1	%	86	114	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-
Lead (% w/w)	0.01	%	-	-	< 0.01
% Moisture	1	%	9.5	14	-
Heavy Metals					
Arsenic	2	mg/kg	9.1	17	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-
Chromium	5	mg/kg	14	19	-
Copper	5	mg/kg	5.3	< 5	-
Lead	5	mg/kg	9.4	12	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	-
Nickel	5	mg/kg	8.6	5.3	-
Zinc	5	mg/kg	32	34	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Aug 29, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Aug 29, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 29, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 29, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 29, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Aug 29, 2016	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Lead (% w/w)	Sydney	Aug 29, 2016	6 Month
- Method: E022.5 - ACID EXTRACTABLE METALS IN PAINT IN LIQUID AND POWDERED FORM BY ICP-MS ANALYSIS			
% Moisture	Melbourne	Aug 29, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

eurofins | mgt

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Site # 1254 & 14271

Sydney
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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: CESSNOCK
Project ID: NEW16P-0119

Order No.:
Report #: 513408
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Aug 29, 2016 8:28 AM
Due: Aug 30, 2016
Priority: 1 Day
Contact Name: Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	SP1-1	Aug 24, 2016		Soil	M16-Au25463	X					X	X
2	SP1-2	Aug 24, 2016		Soil	M16-Au25464	X					X	X
3	SP1-3	Aug 24, 2016		Soil	M16-Au25465	X					X	X
4	SP1-4	Aug 24, 2016		Soil	M16-Au25466	X					X	X
5	SP1-5	Aug 24, 2016		Soil	M16-Au25467	X					X	X
6	SP1-6	Aug 24, 2016		Soil	M16-Au25468	X					X	X
7	SP1-7	Aug 24, 2016		Soil	M16-Au25469			X				
8	SP2-1	Aug 24, 2016		Soil	M16-Au25470						X	X
9	SP2-2	Aug 24, 2016		Soil	M16-Au25471						X	X
10	SP2-3	Aug 24, 2016		Soil	M16-Au25472						X	X

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Address: 8 Ironbark Close
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NSW 2304

Project Name: CESSNOCK
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Order No.:
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Contact Name: Libby Betz

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Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
11	SP3-1	Aug 24, 2016		Soil	M16-Au25473						X	X
12	SP3-2	Aug 24, 2016		Soil	M16-Au25474						X	X
13	SP3-3	Aug 24, 2016		Soil	M16-Au25475						X	X
14	SP3-4	Aug 24, 2016		Soil	M16-Au25476						X	X
15	SP4-1	Aug 24, 2016		Soil	M16-Au25477						X	X
16	SP4-2	Aug 24, 2016		Soil	M16-Au25478						X	X
17	SP4-3	Aug 24, 2016		Soil	M16-Au25479						X	X
18	SP5-1	Aug 24, 2016		Soil	M16-Au25480	X					X	X
19	SP5-2	Aug 24, 2016		Soil	M16-Au25481	X					X	X
20	SP5-3	Aug 24, 2016		Soil	M16-Au25482	X					X	X
21	SP5-4	Aug 24, 2016		Soil	M16-Au25483	X					X	X
22	SP5-6	Aug 24, 2016		Soil	M16-Au25484	X					X	X

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Company Name:	Qualtest	**Order No.:**		**Received:**	Aug 29, 2016 8:28 AM
Address:	8 Ironbark Close	**Report #:**	513408	**Due:**	Aug 30, 2016
	Warabrook	**Phone:**	02 4968 4468	**Priority:**	1 Day
	NSW 2304	**Fax:**	02 4960 9775	**Contact Name:**	Libby Betz
Project Name:	CESSNOCK				
Project ID:	NEW16P-0119				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
23	SP5-7	Aug 24, 2016		Soil	M16-Au25485	X					X	X
24	SP5-8	Aug 24, 2016		Soil	M16-Au25486	X					X	X
25	SP5-5	Aug 24, 2016		Soil	M16-Au25487	X					X	X
26	SP5-9	Aug 24, 2016		Soil	M16-Au25488	X					X	X
27	SP5-10	Aug 24, 2016		Soil	M16-Au25489	X					X	X
28	SP6-3	Aug 24, 2016		Soil	M16-Au25490						X	X
29	SP6-4	Aug 24, 2016		Soil	M16-Au25491						X	X
30	SP6-5	Aug 24, 2016		Soil	M16-Au25492						X	X
31	SP6-7	Aug 24, 2016		Soil	M16-Au25493						X	X
32	SP5-4 FRAG	Aug 24, 2016		Other	M16-Au25494		X					
33	SP1-6 FRAG	Aug 24, 2016		Other	M16-Au25495		X					
34	PAINT 1	Aug 24, 2016		Paint	M16-Au25496					X		

Company Name:	Qualtest	**Order No.:**		**Received:**	Aug 29, 2016 8:28 AM
Address:	8 Ironbark Close Warabrook NSW 2304	**Report #:** **Phone:** **Fax:**	513408 02 4968 4468 02 4960 9775	**Due:** **Priority:** **Contact Name:**	Aug 30, 2016 1 Day Libby Betz
Project Name:	CESSNOCK				
Project ID:	NEW16P-0119				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Lead (% w/w)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X
Sydney Laboratory - NATA Site # 18217						X	X			X		
Brisbane Laboratory - NATA Site # 20794												
External Laboratory												
35	SP6-6	Aug 24, 2016		Soil	M16-Au25497				X			
36	SED 1	Aug 24, 2016		Soil	M16-Au25498				X			
37	SED 2	Aug 24, 2016		Soil	M16-Au25499				X			
Test Counts						16	2	1	3	1	30	30

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Lead (% w/w)	%	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	109			70-130	Pass	
TRH C10-C14	%	114			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	93			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	95			70-130	Pass	
m&p-Xylenes	%	98			70-130	Pass	
Xylenes - Total	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	95			70-130	Pass	
TRH C6-C10	%	102			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	89			70-130	Pass	
Acenaphthylene	%	103			70-130	Pass	
Anthracene	%	100			70-130	Pass	
Benz(a)anthracene	%	106			70-130	Pass	
Benzo(a)pyrene	%	86			70-130	Pass	
Benzo(b&j)fluoranthene	%	96			70-130	Pass	
Benzo(g.h.i)perylene	%	76			70-130	Pass	
Benzo(k)fluoranthene	%	100			70-130	Pass	
Chrysene	%	92			70-130	Pass	
Dibenz(a.h)anthracene	%	103			70-130	Pass	
Fluoranthene	%	97			70-130	Pass	
Fluorene	%	106			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	85			70-130	Pass	
Naphthalene	%	88			70-130	Pass	
Phenanthrene	%	104			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	115			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	99			80-120	Pass	
Cadmium	%	110			80-120	Pass	
Chromium	%	102			80-120	Pass	
Copper	%	116			80-120	Pass	
Lead	%	104			80-120	Pass	
Mercury	%	90			75-125	Pass	
Nickel	%	102			80-120	Pass	
Zinc	%	110			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Zinc	M16-Au24781	NCP	%	92			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Au25464	CP	%	97			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthylene	M16-Au25464	CP	%	116			70-130	Pass	
Anthracene	M16-Au25464	CP	%	116			70-130	Pass	
Benz(a)anthracene	M16-Au25464	CP	%	119			70-130	Pass	
Benzo(a)pyrene	M16-Au25464	CP	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Au25464	CP	%	114			70-130	Pass	
Benzo(g.h.i)perylene	M16-Au25464	CP	%	84			70-130	Pass	
Benzo(k)fluoranthene	M16-Au25464	CP	%	105			70-130	Pass	
Chrysene	M16-Au25464	CP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	M16-Au25464	CP	%	109			70-130	Pass	
Fluoranthene	M16-Au25464	CP	%	110			70-130	Pass	
Fluorene	M16-Au25464	CP	%	117			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25464	CP	%	95			70-130	Pass	
Naphthalene	M16-Au25464	CP	%	102			70-130	Pass	
Phenanthrene	M16-Au25464	CP	%	115			70-130	Pass	
Pyrene	M16-Au25464	CP	%	108			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-Au25473	CP	%	82			70-130	Pass	
TRH C10-C14	M16-Au25473	CP	%	95			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-Au25473	CP	%	77			70-130	Pass	
Toluene	M16-Au25473	CP	%	77			70-130	Pass	
Ethylbenzene	M16-Au25473	CP	%	78			70-130	Pass	
m&p-Xylenes	M16-Au25473	CP	%	83			70-130	Pass	
o-Xylene	M16-Au25473	CP	%	85			70-130	Pass	
Xylenes - Total	M16-Au25473	CP	%	84			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-Au25473	CP	%	80			70-130	Pass	
TRH C6-C10	M16-Au25473	CP	%	75			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Au25473	CP	%	95			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	M16-Au25473	CP	%	90			75-125	Pass	
Chromium	M16-Au25473	CP	%	87			75-125	Pass	
Copper	M16-Au25473	CP	%	111			75-125	Pass	
Lead	M16-Au25473	CP	%	95			75-125	Pass	
Mercury	M16-Au25473	CP	%	108			70-130	Pass	
Nickel	M16-Au25473	CP	%	80			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Au25475	CP	%	94			70-130	Pass	
Acenaphthylene	M16-Au25475	CP	%	113			70-130	Pass	
Anthracene	M16-Au25475	CP	%	114			70-130	Pass	
Benz(a)anthracene	M16-Au25475	CP	%	114			70-130	Pass	
Benzo(a)pyrene	M16-Au25475	CP	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Au25475	CP	%	111			70-130	Pass	
Benzo(g.h.i)perylene	M16-Au25475	CP	%	79			70-130	Pass	
Benzo(k)fluoranthene	M16-Au25475	CP	%	111			70-130	Pass	
Chrysene	M16-Au25475	CP	%	96			70-130	Pass	
Dibenz(a.h)anthracene	M16-Au25475	CP	%	103			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluoranthene	M16-Au25475	CP	%	105			70-130	Pass	
Fluorene	M16-Au25475	CP	%	115			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25475	CP	%	91			70-130	Pass	
Naphthalene	M16-Au25475	CP	%	96			70-130	Pass	
Phenanthrene	M16-Au25475	CP	%	113			70-130	Pass	
Pyrene	M16-Au25475	CP	%	101			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M16-Au25483	CP	%	119			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Au25483	CP	%	119			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Au25483	CP	%	80			75-125	Pass	
Cadmium	M16-Au25483	CP	%	90			75-125	Pass	
Chromium	M16-Au25483	CP	%	76			75-125	Pass	
Copper	M16-Au25483	CP	%	121			75-125	Pass	
Lead	M16-Au25483	CP	%	81			75-125	Pass	
Mercury	M16-Au25483	CP	%	102			70-130	Pass	
Nickel	M16-Au25483	CP	%	82			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Au25485	CP	%	97			70-130	Pass	
Acenaphthylene	M16-Au25485	CP	%	91			70-130	Pass	
Anthracene	M16-Au25485	CP	%	111			70-130	Pass	
Benz(a)anthracene	M16-Au25485	CP	%	107			70-130	Pass	
Benzo(a)pyrene	M16-Au25485	CP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Au25485	CP	%	108			70-130	Pass	
Benzo(g.h.i)perylene	M16-Au25485	CP	%	86			70-130	Pass	
Benzo(k)fluoranthene	M16-Au25485	CP	%	91			70-130	Pass	
Chrysene	M16-Au25485	CP	%	103			70-130	Pass	
Dibenz(a.h)anthracene	M16-Au25485	CP	%	86			70-130	Pass	
Fluoranthene	M16-Au25485	CP	%	99			70-130	Pass	
Fluorene	M16-Au25485	CP	%	109			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25485	CP	%	88			70-130	Pass	
Naphthalene	M16-Au25485	CP	%	87			70-130	Pass	
Phenanthrene	M16-Au25485	CP	%	102			70-130	Pass	
Pyrene	M16-Au25485	CP	%	103			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M16-Au25493	CP	%	120			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Au25493	CP	%	120			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Au25493	CP	%	86			75-125	Pass	
Cadmium	M16-Au25493	CP	%	94			75-125	Pass	
Chromium	M16-Au25493	CP	%	79			75-125	Pass	
Copper	M16-Au25493	CP	%	98			75-125	Pass	
Lead	M16-Au25493	CP	%	83			75-125	Pass	
Mercury	M16-Au25493	CP	%	89			70-130	Pass	
Nickel	M16-Au25493	CP	%	79			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Au25463	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Au25466	CP	%	9.4	9.4	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Au25472	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M16-Au25472	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Au25472	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M16-Au25472	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Au25472	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-Au25472	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-Au25472	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-Au25472	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-Au25472	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-Au25472	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Au25472	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Au25472	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-Au25472	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Au25472	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Au25472	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25472	CP	mg/kg	16	13	17	30%	Pass	
Cadmium	M16-Au25472	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25472	CP	mg/kg	24	21	11	30%	Pass	
Copper	M16-Au25472	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	M16-Au25472	CP	mg/kg	13	9.7	28	30%	Pass	
Mercury	M16-Au25472	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25472	CP	mg/kg	6.9	6.1	12	30%	Pass	
Zinc	M16-Au25472	CP	mg/kg	44	39	14	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25473	CP	mg/kg	13	15	19	30%	Pass	
Cadmium	M16-Au25473	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25473	CP	mg/kg	10	11	6.0	30%	Pass	
Copper	M16-Au25473	CP	mg/kg	12	13	10	30%	Pass	
Lead	M16-Au25473	CP	mg/kg	21	23	8.0	30%	Pass	
Mercury	M16-Au25473	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25473	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	M16-Au25473	CP	mg/kg	130	130	4.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Au25474	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Au25477	CP	%	8.1	7.3	9.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Au25482	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M16-Au25482	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Au25482	CP	mg/kg	70	75	7.0	30%	Pass	
TRH C29-C36	M16-Au25482	CP	mg/kg	73	92	23	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Au25482	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-Au25482	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-Au25482	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-Au25482	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-Au25482	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-Au25482	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Au25482	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Au25482	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-Au25482	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Au25482	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Au25482	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25482	CP	mg/kg	12	10	20	30%	Pass	
Cadmium	M16-Au25482	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25482	CP	mg/kg	21	21	2.0	30%	Pass	
Copper	M16-Au25482	CP	mg/kg	9.5	13	34	30%	Fail	Q15
Lead	M16-Au25482	CP	mg/kg	22	20	9.0	30%	Pass	
Mercury	M16-Au25482	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25482	CP	mg/kg	< 5	5.4	10	30%	Pass	
Zinc	M16-Au25482	CP	mg/kg	56	57	2.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25483	CP	mg/kg	17	17	2.0	30%	Pass	
Cadmium	M16-Au25483	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25483	CP	mg/kg	22	23	2.0	30%	Pass	
Copper	M16-Au25483	CP	mg/kg	25	26	2.0	30%	Pass	
Lead	M16-Au25483	CP	mg/kg	36	36	1.0	30%	Pass	
Mercury	M16-Au25483	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25483	CP	mg/kg	13	13	2.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Au25484	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Au25487	CP	%	10	9.9	4.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M16-Au25492	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Au25492	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M16-Au25492	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-Au25492	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Au25492	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Au25492	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25492	CP	mg/kg	9.1	6.7	31	30%	Fail	Q15
Cadmium	M16-Au25492	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25492	CP	mg/kg	14	10	31	30%	Fail	Q15
Copper	M16-Au25492	CP	mg/kg	5.3	< 5	22	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	M16-Au25492	CP	mg/kg	9.4	7.6	21	30%	Pass	
Mercury	M16-Au25492	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25492	CP	mg/kg	8.6	6.7	26	30%	Pass	
Zinc	M16-Au25492	CP	mg/kg	32	31	5.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25493	CP	mg/kg	17	19	12	30%	Pass	
Cadmium	M16-Au25493	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25493	CP	mg/kg	19	26	30	30%	Pass	
Copper	M16-Au25493	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	M16-Au25493	CP	mg/kg	12	14	15	30%	Pass	
Mercury	M16-Au25493	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25493	CP	mg/kg	5.3	8.0	40	30%	Fail	Q15
Zinc	M16-Au25493	CP	mg/kg	34	40	16	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)
Rhys Thomas	Senior Analyst-Asbestos (NSW)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

CHAIN OF CUSTODY RECORD

Company	Qualtest	Purchase Order	
Address	8 Ironbark Close Warabrook NSW 2304	Eurofins | mgt Quote No.	160812QUAN
Contact Name	Libby Betz	Project No	NEW16P-0119
Contact Phone No	02 4968 4468	Project Manager	Libby Betz
Special Direction		Project Name	~~NEW16P-0119A~~ - Cessnock
Relinquished by (Signature)		Electronic Results Format	
(Time / Date)	26/8/16	Email for Results	Libbybetz@qualtest.com.au

Turn Around Requirements: ☑ 1 DAY* ☐ 2 DAY* ☐ 3 DAY* ☐ 5 DAY (Std.) ☐ Other: (* Surcharges apply)

Containers: 1L Plastic | 250mL Plastic | 125mL Plastic | 250mL Amber Glass | 40mL vial | 125mL Amber Glass | Jar

Method of Shipment: ☐ Courier: ☐ Hand Delivered ☐ Eurofins

No	Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Asbestos % w/w (NEPM)				1 Day TAT							Sample Comments / DG Hazard Warning
1	SP1-1	24.8	Soil	/					/				/							
2	SP1-2			/					/				/							
3	SP1-3			/					/				/							
4	SP1-4			/					/				/							
5	SP1-5			/					/				/							
6	SP1-6			/					/				/							
7	SP1-7			/					/				/							
8	~~SP2-8~~ SP2-1			/					/				/							
9	SP2-2			/					/				/							
10	SP2-3			/					/				/							
11	SP3-1			/					/				/							
12	SP3-2			/					/				/							

Laboratory Use Only								
Received By		STD | ONE | MEL | PER | ADL | NEW | DAR	Date	/ /	Time	:	Signature	
Received By	STS	STD | ONE | MEL | PER | ADL | NEW | DAR	Date	29/8/16	Time	3:35	Signature	

Temperature:

Report No: 51341

CHAIN OF CUSTODY RECORD

Qualtest	
6 Ironbark Close Warabrook NSW 2304	
Libby Betz	
02 4968 4468	
26/8/16	

160812QUAN

Libby Betz

NEWIBP-0119

~~NEWT8P-0110A~~ Cessnock

Libbybetz@qualtest.com.au

			Eurofins mgt Suite: B7 TRH/BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Asbestos quantification - NEPM			10 Day TAT					
SP3-3	24.0	Soil														
SP3-4																
SP4-1																
SP4-2																
SP4-3																
SP5-1																
SP5-2																
SP5-3																
SP5-4																
SP5-6																
SP5-7																
SP5-8																

Laboratory Use Only												
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature	
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Report №	

CHAIN OF CUSTODY RECORD

Company	Qualtest
Address	8 Ironbark Close Warabrook NSW 2304
Contact Name	Libby Betz
Contact Phone	02 4968 4468
Project Name	NEW16P-0119A
Email for Results	Libbybetz@qualtest.com.au
Quote	160812QUAN
Date	__/__/__

Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/BTEXN/PAH/As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Asbestos %w/w-NEPM	1 Day TAT
SP5-5	24.8	Soil	/					/	/
SP5-9	↓	↓	/					/	/
SP5-10	↓	↓	/					/	/
SP6-3	↓	↓	/						/
SP6-4	↓	↓	/						/
SP6-5	↓	↓	/						/
SP6-7	↓	↓	/						/
SP7-1	25.8	↓	/						/
SP7-2	↓	↓	/						
SP8-1	↓	↓	/						
SP8-2	↓	↓	/						
SP8-3	↓	↓	/						

Laboratory Use Only						
Received By	SYD | BNE | MEL | PER | ADL | NEW | DAR	Date __/__/__	Time __:__	Signature	Temperature	
Received By	SYD | BNE | MEL | PER | ADL | NEW | DAR	Date __/__/__	Time __:__	Signature	Report No	

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CHAIN OF CUSTODY RECORD

Company	Qualtest
Address	8 Ironbark Close Warabrook NSW 2304
Contact	Libby Betz
Phone	02 4968 4468
Order No.	160812QUAN
Sampler	Libby Betz
Project No.	NEW16P-0119
Project Name	~~NEW16P-0119A~~ Cessnock
Email for Results	Libbybetz@qualtest.com.au

Signed: 26/8/16

Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence
SP8-4	25.8	Soil	✓				
SP8-5	↓	↓	✓				
SP9-1	↓	↓	✓				
SP9-2	↓	↓	✓				
SP9-3	↓	↓	✓				
SP9-4	↓	↓	✓				
SP9-5	↓	↓	✓				
SP9-6	↓	↓	✓				
SP10-1	↓	↓	✓				
SP10-2	↓	↓	✓				
SP10-3	↓	↓	✓				
SP10-4	↓	↓	✓				

Laboratory Use Only								
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature	Temperature
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature	Report No

CHAIN OF CUSTODY RECORD

	Qualtest
	8 Ironbark Close Warabrook NSW 2304
	Libby Betz
	02 4968 4468
	26/08/16

	160812QUAN
	Libby Betz
	NEW10P-0119
	NEW16P-0119A Cessnock
	Libbybetz@qualtest.com.au

Sample			Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Cool tar				Hold
SP10-5			✓									
SP10-6			✓									
SP10-7			✓									
SP10-Asph								✓				
SP5-Asph								✓				
TP09-D1-0.0-0.1												✓
TP09-D1-0.2-0.3												✓
TP09-D2-0.0-0.1												✓
TP09-D2-0.2-0.3												✓
TP09-D3-0.0-0.0												✓
TP09-D3-0.2-0.3												✓
TP32-0.0-0.1			✓									

Laboratory Use Only											
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Temperature	
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature		Report No	

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CHAIN OF CUSTODY RECORD

Qualtest	
8 Ironbark Close Warabrook NSW 2304	
Libby Betz	
02 4968 4468	
26/8/16	

160812QUAN

L. Betz

NEW16P-0119

~~NSW16P-0119A~~ (ESNOCIL)

Libbybetz@qualtest.com.au

Client Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	oil and grease	Salinity (from EC)
WS1	24.8	water							
WS2	25.8	water							
TP27-0.0-0.1	25.8	Soil							
TP28-0.0-0.1									
TP29-0.0-0.1									
TP30-0.0-0.1									
TP31-0.0-0.1									
TP33-0.0-0.1									
TP30-0.2-0.3									
QC8									
QC10									
QC11									

Laboratory Use Only	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature	Temperature	
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature	Report №	

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CHAIN OF CUSTODY RECORD

Company	Qualtest		L.Betz	Project Name	~~NEW16P-0119A~~ Cessnock
Address	8 Ironbark Close Warabrook NSW 2304		160812QUAN		
Contact	Libby Betz			Email for Results	Libbybetz@qualtest.com.au
Phone	02 4968 4468				
Signature / Date	27.8.16				

Sample ID	Date	Matrix	Eurofins mgt Suite: B7 TRH/BTEXN/PAH/As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Organochlorine Pesticides (OCP's)	Cation Exchange Capacity (CEC)	pH	Asbestos ID (Qualitative) – Absence/Presence	Suite B1	lead		S-26			1 Day TAT
QC14	25.8	Soil	✓											
QC16	↓	Water						✓						
SP54Frag	24.8	Frag					✓							✓
SP10Frag	↓	↓					✓							✓
SS1	25.8	Soil	✓											
SS2	25.8	↓	✓											
SS3	↓	↓	✓											
Paint 1	24.8	Frag							✓					✓
QC9											✓			
QC11											✓			
QC13											✓			
QC15											✓			

} Send to ALS

Laboratory Use Only	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature	Temperature
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Date	__/__/__	Time	__:__	Signature	Report No

QC17

AU02_USR_LAB00020

From: Andrew Black
Sent: Monday, 29 August 2016 10:04 AM
To: AU02_USR_LAB00020
Subject: FW: Updated COC - fast TAT
Attachments: NEW16P-0119.pdf

Importance: High

For the large job you received this morning use this COC for some analytes are to be placed on 1 day TAT.

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Libby Betz [mailto:LibbyBetz@qualtest.com.au]
Sent: Friday, 26 August 2016 4:12 PM
To: Andrew Black
Subject: Updated COC - fast TAT

Hi Andrew,

I have just talked to our client and they have requests fast TAT on some samples as part of this job.

Can I please have those marked in red on the attached COC analysed on 1 day TAT (50% surcharge). Please leave the remaining samples on standard 5 day.

Thanks,

Libby Betz
Senior Environmental Scientist

Qualtest
LABORATORY (NSW) PTY LTD

Mob: +61 432189418
Tel: +61 2 4968 4468
Fax: +61 2 4960 9775
Web: www.qualtest.com.au
8 Ironbark Close, Warabrook, NSW, 2304
Libbybetz@qualtest.com.au

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Qualtest**
Contact name:	Libby Betz
Project name:	CESSNOCK
Project ID:	NEW16P-0119A
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 29, 2016 8:28 AM
Eurofins | mgt reference:	**513416**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Libby Betz - libbybetz@qualtest.com.au.

eurofins | mgt

Certificate of Analysis

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Libby Betz**

Report **513416-S**
Project name CESSNOCK
Project ID NEW16P-0119A
Received Date Aug 29, 2016

Client Sample ID			**SP7-1**	**SP7-2**	**SP8-1**	**SP8-2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Au25553**	**M16-Au25554**	**M16-Au25555**	**M16-Au25556**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	23	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	70	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	93	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	100	105	76	75
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.7
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SP7-1	SP7-2	SP8-1	SP8-2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25553	M16-Au25554	M16-Au25555	M16-Au25556
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.6
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.3
2-Fluorobiphenyl (surr.)	1	%	97	105	102	104
p-Terphenyl-d14 (surr.)	1	%	122	120	124	134
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	8.1	10	12	13
Heavy Metals						
Arsenic	2	mg/kg	9.4	11	14	9.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	12	20	15
Copper	5	mg/kg	< 5	< 5	5.2	6.8
Lead	5	mg/kg	9.8	12	6.8	8.2
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	7.2	16	17
Zinc	5	mg/kg	24	28	32	39

Client Sample ID			SP8-3	SP8-4	SP8-5	SP9-1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25557	M16-Au25558	M16-Au25559	M16-Au25560
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	61	86	79	70
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			SP8-3	SP8-4	SP8-5	SP9-1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25557	M16-Au25558	M16-Au25559	M16-Au25560
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	95	98	105	105
p-Terphenyl-d14 (surr.)	1	%	110	120	112	109
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	12	9.2	7.5	7.3
Heavy Metals						
Arsenic	2	mg/kg	13	16	17	29
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	19	20	25
Copper	5	mg/kg	5.9	< 5	< 5	17
Lead	5	mg/kg	9.7	14	9.7	28
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	12	12	12	< 5
Zinc	5	mg/kg	59	72	69	220

Client Sample ID			SP9-2	SP9-3	SP9-4	SP9-5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25561	M16-Au25562	M16-Au25563	M16-Au25564
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	78	77	64	62
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	107	116	108	99
p-Terphenyl-d14 (surr.)	1	%	107	118	109	98
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	8.4	8.1	7.4	8.7

Client Sample ID			SP9-2	SP9-3	SP9-4	SP9-5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25561	M16-Au25562	M16-Au25563	M16-Au25564
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	41	41	24	140
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	21	21	18	30
Copper	5	mg/kg	50	41	24	100
Lead	5	mg/kg	66	41	40	65
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	5.0	8.0
Zinc	5	mg/kg	1000	350	520	950

Client Sample ID			SP9-6	SP10-1	SP10-2	SP10-3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25565	M16-Au25566	M16-Au25567	M16-Au25568
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	82	73	64	65
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SP9-6	SP10-1	SP10-2	SP10-3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25565	M16-Au25566	M16-Au25567	M16-Au25568
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	133	97	62	91
p-Terphenyl-d14 (surr.)	1	%	136	93	54	126
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	8.6	7.7	7.6	8.7
Heavy Metals						
Arsenic	2	mg/kg	34	9.0	6.8	9.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	19	12	11	21
Copper	5	mg/kg	64	< 5	7.2	14
Lead	5	mg/kg	100	9.0	7.9	7.2
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.2	5.5	8.5	12
Zinc	5	mg/kg	1600	52	110	36

Client Sample ID			SP10-4	SP10-5	SP10-6	SP10-7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25569	M16-Au25570	M16-Au25571	M16-Au25572
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	490	130	< 50
TRH C29-C36	50	mg/kg	51	230	110	< 50
TRH C10-36 (Total)	50	mg/kg	51	720	240	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	64	65	55	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			SP10-4	SP10-5	SP10-6	SP10-7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25569	M16-Au25570	M16-Au25571	M16-Au25572
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	33	8.6	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	33	8.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	33	8.6	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	3.9	1.0	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	24	5.9	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	20	5.1	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	21	5.6	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	14	4.0	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	16	5.0	< 0.5
Chrysene	0.5	mg/kg	< 0.5	22	5.9	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	5.2	1.4	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	45	15	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	12	3.4	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	12	2.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	40	14	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	235.1	68.8	< 0.5
2-Fluorobiphenyl (surr.)	1	%	103	70	91	92
p-Terphenyl-d14 (surr.)	1	%	89	53	81	83
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	640	180	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	15	7.0	4.5	9.4
Heavy Metals						
Arsenic	2	mg/kg	12	4.8	6.6	14
Cadmium	0.4	mg/kg	0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	16	11	23	18
Copper	5	mg/kg	16	11	28	13
Lead	5	mg/kg	46	9.3	24	28
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.9	38	34	19
Zinc	5	mg/kg	120	27	160	110

Client Sample ID			SP10-ASPH	SP5-ASPH	TP32-0.0-0.1	TP27-0.0-0.1
Sample Matrix			Other	Other	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25573	M16-Au25574	M16-Au25575	M16-Au25578
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	64	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	< 50
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	89	92
p-Terphenyl-d14 (surr.)	1	%	-	-	83	84
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
Coal Tar in Asphalt*[M11]			Present	Present	-	-
% Moisture	1	%	-	-	18	14

Client Sample ID			SP10-ASPH	SP5-ASPH	TP32-0.0-0.1	TP27-0.0-0.1
Sample Matrix			Other	Other	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25573	M16-Au25574	M16-Au25575	M16-Au25578
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	-	-	6.3	11
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	15	14
Copper	5	mg/kg	-	-	8.2	< 5
Lead	5	mg/kg	-	-	11	8.5
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	10	< 5
Zinc	5	mg/kg	-	-	47	17

Client Sample ID			TP28-0.0-0.1	TP29-0.0-0.1	TP30-0.0-0.1	TP31-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25579	M16-Au25580	M16-Au25581	M16-Au25582
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	68	77	70	76
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			TP28-0.0-0.1	TP29-0.0-0.1	TP30-0.0-0.1	TP31-0.0-0.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Au25579**	**M16-Au25580**	**M16-Au25581**	**M16-Au25582**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	91	110	91	84
p-Terphenyl-d14 (surr.)	1	%	82	105	85	79
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	10	7.7	9.0	8.5
Heavy Metals						
Arsenic	2	mg/kg	11	11	11	8.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	13	16	17	27
Copper	5	mg/kg	< 5	< 5	< 5	32
Lead	5	mg/kg	8.1	8.1	6.1	15
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	5.1	20
Zinc	5	mg/kg	20	20	31	39

Client Sample ID			TP33-0.0-0.1	TP30-0.2-0.3	QC8	QC10
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Au25583**	**M16-Au25584**	**M16-Au25585**	**M16-Au25586**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	130	< 50
TRH C29-C36	50	mg/kg	61	< 50	82	< 50
TRH C10-36 (Total)	50	mg/kg	61	< 50	212	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	68	64	66	57
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			TP33-0.0-0.1	TP30-0.2-0.3	QC8	QC10
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Au25583**	**M16-Au25584**	**M16-Au25585**	**M16-Au25586**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	94	106	113	99
p-Terphenyl-d14 (surr.)	1	%	82	108	103	95
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.05	mg/kg	< 0.05	-	-	-
Toxaphene	1	mg/kg	< 1	-	-	-
Dibutylchlorendate (surr.)	1	%	108	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	80	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	180	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100

Client Sample ID			TP33-0.0-0.1	TP30-0.2-0.3	QC8	QC10
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25583	M16-Au25584	M16-Au25585	M16-Au25586
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	57	-	-	-
pH (1:5 Aqueous extract)	0.1	pH Units	7.3	-	-	-
% Moisture	1	%	20	21	13	11
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	6.9	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	13	26	11	10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	39	15	16
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	13	15	8.5	11
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.8	7.9	5.9	6.9
Zinc	5	mg/kg	63	38	56	51

Client Sample ID			QC12	QC14	SS1	SS2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Au25587	M16-Au25588	M16-Au25590	M16-Au25591
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 24, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	330
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	210
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	540
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	59	52	57	50
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	22
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	22
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	22
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.7
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	16

Client Sample ID			QC12	QC14	SS1	SS2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Au25587**	**M16-Au25588**	**M16-Au25590**	**M16-Au25591**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 24, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	14
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	16
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	7.1
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	12
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	15
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.3
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	47
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	6.6
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	5.0
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	44
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	186.7
2-Fluorobiphenyl (surr.)	1	%	116	101	114	112
p-Terphenyl-d14 (surr.)	1	%	109	106	114	114
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	460
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	120
% Moisture	1	%	6.5	6.9	8.6	11
Heavy Metals						
Arsenic	2	mg/kg	29	3.8	5.5	9.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.4
Chromium	5	mg/kg	21	9.1	28	18
Copper	5	mg/kg	23	< 5	31	19
Lead	5	mg/kg	34	8.8	5.7	24
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	18	40
Zinc	5	mg/kg	370	50	36	200

Client Sample ID			SS3
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**M16-Au25592**
Date Sampled			**Aug 25, 2016**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	110
TRH C29-C36	50	mg/kg	150
TRH C10-36 (Total)	50	mg/kg	260
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1

Client Sample ID			SS3
Sample Matrix			Soil
Eurofins | mgt Sample No.			M16-Au25592
Date Sampled			Aug 25, 2016
Test/Reference	LOR	Unit	
BTEX			
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	60
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	3.1
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.1
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.1
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.1
Benzo(a)pyrene	0.5	mg/kg	1.7
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	2.2
Benzo(g.h.i)perylene	0.5	mg/kg	1.1
Benzo(k)fluoranthene	0.5	mg/kg	1.4
Chrysene	0.5	mg/kg	2.0
Dibenz(a.h)anthracene	0.5	mg/kg	0.7
Fluoranthene	0.5	mg/kg	5.6
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.9
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	0.8
Pyrene	0.5	mg/kg	5.3
Total PAH*	0.5	mg/kg	23.8
2-Fluorobiphenyl (surr.)	1	%	104
p-Terphenyl-d14 (surr.)	1	%	104
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	180
TRH >C34-C40	100	mg/kg	< 100
% Moisture	1	%	19
Heavy Metals			
Arsenic	2	mg/kg	5.0
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	11
Copper	5	mg/kg	< 5
Lead	5	mg/kg	10
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	30

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 01, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Aug 31, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 31, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Eurofins | mgt Suite B7			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 29, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 01, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Aug 29, 2016	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Organochlorine Pesticides	Melbourne	Aug 29, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Coal Tar in Asphalt*	Sydney	Aug 30, 2016	0 Day
- Method: RMS Method T542 – identification of tar or pitch in asphalt			
pH (1:5 Aqueous extract)	Melbourne	Aug 31, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Conductivity (1:5 aqueous extract at 25°C)	Melbourne	Aug 29, 2016	7 Day
- Method: LTM-INO-4030			
Ion Exchange Properties	Melbourne	Aug 31, 2016	
% Moisture	Melbourne	Aug 29, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: CESSNOCK
Project ID: NEW16P-0119A

Order No.:
Report #: 513416
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Aug 29, 2016 8:28 AM
Due: Sep 5, 2016
Priority: 5 Day
Contact Name: Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	SP7-1	Aug 25, 2016		Soil	M16-Au25553								X		X	
2	SP7-2	Aug 25, 2016		Soil	M16-Au25554								X		X	
3	SP8-1	Aug 25, 2016		Soil	M16-Au25555								X		X	
4	SP8-2	Aug 25, 2016		Soil	M16-Au25556								X		X	
5	SP8-3	Aug 25, 2016		Soil	M16-Au25557								X		X	
6	SP8-4	Aug 25, 2016		Soil	M16-Au25558								X		X	
7	SP8-5	Aug 25, 2016		Soil	M16-Au25559								X		X	
8	SP9-1	Aug 25, 2016		Soil	M16-Au25560								X		X	
9	SP9-2	Aug 25, 2016		Soil	M16-Au25561								X		X	
10	SP9-3	Aug 25, 2016		Soil	M16-Au25562								X		X	

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
11	SP9-4	Aug 25, 2016		Soil	M16-Au25563								X		X	
12	SP9-5	Aug 25, 2016		Soil	M16-Au25564								X		X	
13	SP9-6	Aug 25, 2016		Soil	M16-Au25565								X		X	
14	SP10-1	Aug 25, 2016		Soil	M16-Au25566								X		X	
15	SP10-2	Aug 25, 2016		Soil	M16-Au25567								X		X	
16	SP10-3	Aug 25, 2016		Soil	M16-Au25568								X		X	
17	SP10-4	Aug 25, 2016		Soil	M16-Au25569								X		X	
18	SP10-5	Aug 25, 2016		Soil	M16-Au25570								X		X	
19	SP10-6	Aug 25, 2016		Soil	M16-Au25571								X		X	
20	SP10-7	Aug 25, 2016		Soil	M16-Au25572								X		X	
21	SP10-ASPH	Aug 25, 2016		Other	M16-Au25573	X										
22	SP5-ASPH	Aug 25, 2016		Other	M16-Au25574	X										

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Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
23	TP32-0.0-0.1	Aug 25, 2016		Soil	M16-Au25575								X		X	
24	WS1	Aug 25, 2016		Water	M16-Au25576			X	X		X				X	
25	WS2	Aug 25, 2016		Water	M16-Au25577			X	X		X				X	
26	TP27-0.0-0.1	Aug 25, 2016		Soil	M16-Au25578								X		X	
27	TP28-0.0-0.1	Aug 25, 2016		Soil	M16-Au25579								X		X	
28	TP29-0.0-0.1	Aug 25, 2016		Soil	M16-Au25580								X		X	
29	TP30-0.0-0.1	Aug 25, 2016		Soil	M16-Au25581								X		X	
30	TP31-0.0-0.1	Aug 25, 2016		Soil	M16-Au25582								X		X	
31	TP33-0.0-0.1	Aug 25, 2016		Soil	M16-Au25583					X		X	X	X	X	
32	TP30-0.2-0.3	Aug 25, 2016		Soil	M16-Au25584								X		X	
33	QC8	Aug 25, 2016		Soil	M16-Au25585								X		X	
34	QC10	Aug 25, 2016		Soil	M16-Au25586								X		X	

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Contact Name: Libby Betz

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Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
35	QC12	Aug 25, 2016		Soil	M16-Au25587								X		X	
36	QC14	Aug 25, 2016		Soil	M16-Au25588								X		X	
37	QC16	Aug 25, 2016		Water	M16-Au25589											X
38	SS1	Aug 24, 2016		Soil	M16-Au25590								X		X	
39	SS2	Aug 25, 2016		Soil	M16-Au25591								X		X	
40	SS3	Aug 25, 2016		Soil	M16-Au25592								X		X	
41	TP09_D1-0.0-0.1	Aug 25, 2016		Soil	M16-Au25607		X									
42	TP09_D1-0.2-0.3	Aug 25, 2016		Soil	M16-Au25608		X									
43	TP09_D2-0.0-0.1	Aug 25, 2016		Soil	M16-Au25609		X									
44	TP09_D2-0.2-	Aug 25, 2016		Soil	M16-Au25610		X									

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Company Name:	Qualtest	**Order No.:**		**Received:**	Aug 29, 2016 8:28 AM
Address:	8 Ironbark Close Warabrook NSW 2304	**Report #:** **Phone:** **Fax:**	513416 02 4968 4468 02 4960 9775	**Due:** **Priority:** **Contact Name:**	Sep 5, 2016 5 Day Libby Betz
Project Name:	CESSNOCK				
Project ID:	NEW16P-0119A				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
	0.3															
45	TP09_D3-0.0-0.1	Aug 25, 2016		Soil	M16-Au25611		X									
46	TP09_D3-0.2-0.3	Aug 25, 2016		Soil	M16-Au25612		X									
Test Counts						2	6	2	2	1	2	1	35	1	37	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	< 10			10	Pass	
Method Blank							
Ion Exchange Properties							
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	119			70-130	Pass	
TRH C10-C14	%	86			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	129			70-130	Pass	
Toluene	%	114			70-130	Pass	
Ethylbenzene	%	103			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
Xylenes - Total	%	100			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	103			70-130	Pass	
TRH C6-C10	%	111			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	77			70-130	Pass	
Acenaphthylene	%	76			70-130	Pass	
Anthracene	%	86			70-130	Pass	
Benz(a)anthracene	%	75			70-130	Pass	
Benzo(a)pyrene	%	70			70-130	Pass	
Benzo(b&j)fluoranthene	%	93			70-130	Pass	
Benzo(g.h.i)perylene	%	73			70-130	Pass	
Benzo(k)fluoranthene	%	80			70-130	Pass	
Chrysene	%	73			70-130	Pass	
Dibenz(a.h)anthracene	%	71			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluoranthene	%	73			70-130	Pass	
Fluorene	%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	70			70-130	Pass	
Naphthalene	%	72			70-130	Pass	
Phenanthrene	%	81			70-130	Pass	
Pyrene	%	73			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	118			70-130	Pass	
4.4'-DDE	%	104			70-130	Pass	
4.4'-DDT	%	109			70-130	Pass	
a-BHC	%	86			70-130	Pass	
Aldrin	%	91			70-130	Pass	
b-BHC	%	99			70-130	Pass	
d-BHC	%	107			70-130	Pass	
Dieldrin	%	102			70-130	Pass	
Endosulfan I	%	90			70-130	Pass	
Endosulfan II	%	121			70-130	Pass	
Endosulfan sulphate	%	110			70-130	Pass	
Endrin	%	102			70-130	Pass	
Endrin aldehyde	%	110			70-130	Pass	
Endrin ketone	%	113			70-130	Pass	
g-BHC (Lindane)	%	99			70-130	Pass	
Heptachlor	%	98			70-130	Pass	
Heptachlor epoxide	%	96			70-130	Pass	
Hexachlorobenzene	%	92			70-130	Pass	
Methoxychlor	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	87			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	92			80-120	Pass	
Cadmium	%	91			80-120	Pass	
Chromium	%	96			80-120	Pass	
Copper	%	98			80-120	Pass	
Lead	%	93			80-120	Pass	
Mercury	%	86			75-125	Pass	
Nickel	%	94			80-120	Pass	
Zinc	%	96			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Au26089	NCP	%	110			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-Au25554	CP	%	105			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-Au25554	CP	%	123			70-130	Pass	
Toluene	M16-Au25554	CP	%	107			70-130	Pass	
Ethylbenzene	M16-Au25554	CP	%	99			70-130	Pass	
m&p-Xylenes	M16-Au25554	CP	%	93			70-130	Pass	
o-Xylene	M16-Au25554	CP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	M16-Au25554	CP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-Au25554	CP	%	107			70-130	Pass	
TRH C6-C10	M16-Au25554	CP	%	98			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Au25554	CP	%	105			70-130	Pass	
Acenaphthylene	M16-Au25554	CP	%	106			70-130	Pass	
Anthracene	M16-Au25554	CP	%	83			70-130	Pass	
Benz(a)anthracene	M16-Au25554	CP	%	103			70-130	Pass	
Benzo(a)pyrene	M16-Au25554	CP	%	110			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Au25554	CP	%	96			70-130	Pass	
Benzo(g.h.i)perylene	M16-Au25554	CP	%	95			70-130	Pass	
Benzo(k)fluoranthene	M16-Au25554	CP	%	129			70-130	Pass	
Chrysene	M16-Au25554	CP	%	106			70-130	Pass	
Dibenz(a.h)anthracene	M16-Au25554	CP	%	99			70-130	Pass	
Fluoranthene	M16-Au25554	CP	%	130			70-130	Pass	
Fluorene	M16-Au25554	CP	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25554	CP	%	94			70-130	Pass	
Naphthalene	M16-Au25554	CP	%	107			70-130	Pass	
Phenanthrene	M16-Au25554	CP	%	81			70-130	Pass	
Pyrene	M16-Au25554	CP	%	125			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	M16-Au25554	CP	%	98			75-125	Pass	
Chromium	M16-Au25554	CP	%	122			75-125	Pass	
Copper	M16-Au25554	CP	%	116			75-125	Pass	
Lead	M16-Au25554	CP	%	100			75-125	Pass	
Mercury	M16-Au25554	CP	%	82			70-130	Pass	
Nickel	M16-Au25554	CP	%	93			75-125	Pass	
Zinc	M16-Au25554	CP	%	92			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-Au25567	CP	%	89			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-Au25567	CP	%	99			70-130	Pass	
Toluene	M16-Au25567	CP	%	90			70-130	Pass	
Ethylbenzene	M16-Au25567	CP	%	87			70-130	Pass	
m&p-Xylenes	M16-Au25567	CP	%	85			70-130	Pass	
o-Xylene	M16-Au25567	CP	%	85			70-130	Pass	
Xylenes - Total	M16-Au25567	CP	%	85			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-Au25567	CP	%	79			70-130	Pass	
TRH C6-C10	M16-Au25567	CP	%	81			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Mercury	M16-Au25567	CP	%	84			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-Au25583	CP	%	84			70-130	Pass	
TRH C10-C14	M16-Au25583	CP	%	105			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-Au25583	CP	%	84			70-130	Pass	
Toluene	M16-Au25583	CP	%	78			70-130	Pass	
Ethylbenzene	M16-Au25583	CP	%	71			70-130	Pass	
m&p-Xylenes	M16-Au25583	CP	%	74			70-130	Pass	
o-Xylene	M16-Au25583	CP	%	74			70-130	Pass	
Xylenes - Total	M16-Au25583	CP	%	74			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-Au25583	CP	%	72			70-130	Pass	
TRH C6-C10	M16-Au25583	CP	%	78			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Au25583	CP	%	109			70-130	Pass	
Acenaphthylene	M16-Au25583	CP	%	107			70-130	Pass	
Anthracene	M16-Au25583	CP	%	102			70-130	Pass	
Benz(a)anthracene	M16-Au25583	CP	%	101			70-130	Pass	
Benzo(a)pyrene	M16-Au25583	CP	%	103			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Au25583	CP	%	103			70-130	Pass	
Benzo(g.h.i)perylene	M16-Au25583	CP	%	98			70-130	Pass	
Benzo(k)fluoranthene	M16-Au25583	CP	%	109			70-130	Pass	
Chrysene	M16-Au25583	CP	%	109			70-130	Pass	
Dibenz(a.h)anthracene	M16-Au25583	CP	%	104			70-130	Pass	
Fluoranthene	M16-Au25583	CP	%	100			70-130	Pass	
Fluorene	M16-Au25583	CP	%	102			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25583	CP	%	104			70-130	Pass	
Naphthalene	M16-Au25583	CP	%	104			70-130	Pass	
Phenanthrene	M16-Au25583	CP	%	99			70-130	Pass	
Pyrene	M16-Au25583	CP	%	101			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M16-Au25583	CP	%	118			70-130	Pass	
4.4'-DDE	M16-Au25583	CP	%	110			70-130	Pass	
4.4'-DDT	M16-Au25583	CP	%	106			70-130	Pass	
a-BHC	M16-Au25583	CP	%	104			70-130	Pass	
Aldrin	M16-Au25583	CP	%	105			70-130	Pass	
b-BHC	M16-Au25583	CP	%	105			70-130	Pass	
d-BHC	M16-Au25583	CP	%	113			70-130	Pass	
Dieldrin	M16-Au25583	CP	%	105			70-130	Pass	
Endosulfan I	M16-Au25583	CP	%	95			70-130	Pass	
Endosulfan II	M16-Au25583	CP	%	123			70-130	Pass	
Endosulfan sulphate	M16-Au25583	CP	%	104			70-130	Pass	
Endrin	M16-Au25583	CP	%	103			70-130	Pass	
Endrin aldehyde	M16-Au25583	CP	%	95			70-130	Pass	
Endrin ketone	M16-Au25583	CP	%	104			70-130	Pass	
g-BHC (Lindane)	M16-Au25583	CP	%	106			70-130	Pass	
Heptachlor	M16-Au25583	CP	%	108			70-130	Pass	
Heptachlor epoxide	M16-Au25583	CP	%	106			70-130	Pass	
Hexachlorobenzene	M16-Au25583	CP	%	107			70-130	Pass	
Methoxychlor	M16-Au25583	CP	%	90			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Au25583	CP	%	104			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Au25553	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Au25553	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-Au25553	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-Au25553	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-Au25553	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-Au25553	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-Au25553	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Au25553	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Au25553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B16-Au25536	NCP	%	14	14	4.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25553	CP	mg/kg	9.4	7.8	19	30%	Pass	
Cadmium	M16-Au25553	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25553	CP	mg/kg	12	11	17	30%	Pass	
Copper	M16-Au25553	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	M16-Au25553	CP	mg/kg	9.8	13	28	30%	Pass	
Mercury	M16-Au25553	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25553	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	M16-Au25553	CP	mg/kg	24	24	3.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25554	CP	mg/kg	11	11	1.0	30%	Pass	
Cadmium	M16-Au25554	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25554	CP	mg/kg	12	12	1.0	30%	Pass	
Copper	M16-Au25554	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	M16-Au25554	CP	mg/kg	12	15	16	30%	Pass	
Mercury	M16-Au25554	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Nickel	M16-Au25554	CP	mg/kg	7.2	7.4	3.0	30%	Pass	
Zinc	M16-Au25554	CP	mg/kg	28	29	4.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25563	CP	mg/kg	24	23	4.0	30%	Pass	
Cadmium	M16-Au25563	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25563	CP	mg/kg	18	19	2.0	30%	Pass	
Copper	M16-Au25563	CP	mg/kg	24	25	2.0	30%	Pass	
Lead	M16-Au25563	CP	mg/kg	40	37	7.0	30%	Pass	
Mercury	M16-Au25563	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25563	CP	mg/kg	5.0	< 5	3.0	30%	Pass	
Zinc	M16-Au25563	CP	mg/kg	520	510	1.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Au25567	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Au25567	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-Au25567	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-Au25567	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-Au25567	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-Au25567	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-Au25567	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Au25567	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Au25567	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25567	CP	mg/kg	6.8	5.1	28	30%	Pass	
Cadmium	M16-Au25567	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25567	CP	mg/kg	11	11	2.0	30%	Pass	
Copper	M16-Au25567	CP	mg/kg	7.2	7.2	<1	30%	Pass	
Lead	M16-Au25567	CP	mg/kg	7.9	8.0	2.0	30%	Pass	
Mercury	M16-Au25567	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25567	CP	mg/kg	8.5	7.3	15	30%	Pass	
Zinc	M16-Au25567	CP	mg/kg	110	100	9.0	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Au25583	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M16-Au25583	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Au25583	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M16-Au25583	CP	mg/kg	61	59	5.0	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Au25583	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-Au25583	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-Au25583	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-Au25583	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-Au25583	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-Au25583	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Au25583	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Au25583	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Au25583	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Hexachlorobenzene	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Au25583	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Au25583	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-Au25583	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Au25583	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Au25583	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C)	M16-Au25127	NCP	uS/cm	300	290	2.0	30%	Pass	
pH (1:5 Aqueous extract)	M16-Au26126	NCP	pH Units	12	12	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au25583	CP	mg/kg	13	12	10	30%	Pass	
Cadmium	M16-Au25583	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Au25583	CP	mg/kg	18	18	4.0	30%	Pass	
Copper	M16-Au25583	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	M16-Au25583	CP	mg/kg	13	13	5.0	30%	Pass	
Mercury	M16-Au25583	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Au25583	CP	mg/kg	6.8	5.6	20	30%	Pass	
Zinc	M16-Au25583	CP	mg/kg	63	71	13	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M11	NATA accreditation does not cover the performance of this service.
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Inorganic (NSW)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Libby Betz**

Report **513416-W**
Project name CESSNOCK
Project ID NEW16P-0119A
Received Date Aug 29, 2016

Client Sample ID			**WS1**	**WS2**	**QC16**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M16-Au25576**	**M16-Au25577**	**M16-Au25589**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit			
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	-	-	< 0.02
Oil & Grease (HEM)	10	mg/L	< 10	< 10	-
pH	0.1	pH Units	6.5	7.1	-
Salinity (determined from EC)*	20	mg/L	84	150	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	-
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	127	144	134
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH C6-C10	0.02	mg/L	-	-	< 0.02
Volatile Organics					
Naphthalene[N02]	0.01	mg/L	-	-	< 0.01
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	-
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	-

Client Sample ID			WS1	WS2	QC16
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M16-Au25576**	**M16-Au25577**	**M16-Au25589**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	-
Fluorene	0.001	mg/L	< 0.001	< 0.001	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	-
Total PAH*	0.001	mg/L	< 0.001	< 0.001	-
2-Fluorobiphenyl (surr.)	1	%	116	84	-
p-Terphenyl-d14 (surr.)	1	%	112	122	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	-
Heavy Metals					
Arsenic	0.001	mg/L	0.007	0.002	-
Cadmium	0.0002	mg/L	0.0003	< 0.0002	-
Chromium	0.001	mg/L	0.009	0.002	-
Copper	0.001	mg/L	0.006	0.001	-
Lead	0.001	mg/L	0.012	0.002	-
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-
Nickel	0.001	mg/L	0.007	0.001	-
Zinc	0.005	mg/L	0.18	0.010	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
TRH C6-C10 less BTEX (F1)	Melbourne	Aug 29, 2016	14 Day
- Method: LM-LTM-ORG-2010			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Aug 30, 2016	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Aug 29, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 29, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Volatile Organics	Melbourne	Aug 29, 2016	7 Day
- Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 29, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Oil & Grease (HEM)	Melbourne	Aug 29, 2016	28 Day
- Method: APHA 5520B Oil & Grease			
pH	Melbourne	Aug 29, 2016	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Salinity (determined from EC)*	Melbourne	Aug 29, 2016	0 Day
Eurofins | mgt Suite B7			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 30, 2016	7 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 30, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Aug 29, 2016	28 Days
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

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NATA # 1261 Site # 20794

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: CESSNOCK
Project ID: NEW16P-0119A

Order No.:
Report #: 513416
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Aug 29, 2016 8:28 AM
Due: Sep 5, 2016
Priority: 5 Day
Contact Name: Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	SP7-1	Aug 25, 2016		Soil	M16-Au25553								X		X	
2	SP7-2	Aug 25, 2016		Soil	M16-Au25554								X		X	
3	SP8-1	Aug 25, 2016		Soil	M16-Au25555								X		X	
4	SP8-2	Aug 25, 2016		Soil	M16-Au25556								X		X	
5	SP8-3	Aug 25, 2016		Soil	M16-Au25557								X		X	
6	SP8-4	Aug 25, 2016		Soil	M16-Au25558								X		X	
7	SP8-5	Aug 25, 2016		Soil	M16-Au25559								X		X	
8	SP9-1	Aug 25, 2016		Soil	M16-Au25560								X		X	
9	SP9-2	Aug 25, 2016		Soil	M16-Au25561								X		X	
10	SP9-3	Aug 25, 2016		Soil	M16-Au25562								X		X	

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
11	SP9-4	Aug 25, 2016		Soil	M16-Au25563								X		X	
12	SP9-5	Aug 25, 2016		Soil	M16-Au25564								X		X	
13	SP9-6	Aug 25, 2016		Soil	M16-Au25565								X		X	
14	SP10-1	Aug 25, 2016		Soil	M16-Au25566								X		X	
15	SP10-2	Aug 25, 2016		Soil	M16-Au25567								X		X	
16	SP10-3	Aug 25, 2016		Soil	M16-Au25568								X		X	
17	SP10-4	Aug 25, 2016		Soil	M16-Au25569								X		X	
18	SP10-5	Aug 25, 2016		Soil	M16-Au25570								X		X	
19	SP10-6	Aug 25, 2016		Soil	M16-Au25571								X		X	
20	SP10-7	Aug 25, 2016		Soil	M16-Au25572								X		X	
21	SP10-ASPH	Aug 25, 2016		Other	M16-Au25573	X										
22	SP5-ASPH	Aug 25, 2016		Other	M16-Au25574	X										

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Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
23	TP32-0.0-0.1	Aug 25, 2016		Soil	M16-Au25575								X		X	
24	WS1	Aug 25, 2016		Water	M16-Au25576			X	X		X				X	
25	WS2	Aug 25, 2016		Water	M16-Au25577			X	X		X				X	
26	TP27-0.0-0.1	Aug 25, 2016		Soil	M16-Au25578								X		X	
27	TP28-0.0-0.1	Aug 25, 2016		Soil	M16-Au25579								X		X	
28	TP29-0.0-0.1	Aug 25, 2016		Soil	M16-Au25580								X		X	
29	TP30-0.0-0.1	Aug 25, 2016		Soil	M16-Au25581								X		X	
30	TP31-0.0-0.1	Aug 25, 2016		Soil	M16-Au25582								X		X	
31	TP33-0.0-0.1	Aug 25, 2016		Soil	M16-Au25583					X		X	X	X	X	
32	TP30-0.2-0.3	Aug 25, 2016		Soil	M16-Au25584								X		X	
33	QC8	Aug 25, 2016		Soil	M16-Au25585								X		X	
34	QC10	Aug 25, 2016		Soil	M16-Au25586								X		X	

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Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
35	QC12	Aug 25, 2016		Soil	M16-Au25587								X		X	
36	QC14	Aug 25, 2016		Soil	M16-Au25588								X		X	
37	QC16	Aug 25, 2016		Water	M16-Au25589											X
38	SS1	Aug 24, 2016		Soil	M16-Au25590								X		X	
39	SS2	Aug 25, 2016		Soil	M16-Au25591								X		X	
40	SS3	Aug 25, 2016		Soil	M16-Au25592								X		X	
41	TP09_D1-0.0-0.1	Aug 25, 2016		Soil	M16-Au25607		X									
42	TP09_D1-0.2-0.3	Aug 25, 2016		Soil	M16-Au25608		X									
43	TP09_D2-0.0-0.1	Aug 25, 2016		Soil	M16-Au25609		X									
44	TP09_D2-0.2-	Aug 25, 2016		Soil	M16-Au25610		X									

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Site # 1254 & 14271

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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Qualtest	**Order No.:**		**Received:**	Aug 29, 2016 8:28 AM
Address:	8 Ironbark Close Warabrook NSW 2304	**Report #:** **Phone:** **Fax:**	513416 02 4968 4468 02 4960 9775	**Due:** **Priority:** **Contact Name:**	Sep 5, 2016 5 Day Libby Betz
Project Name:	CESSNOCK				
Project ID:	NEW16P-0119A				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Coal Tar in Asphalt*	HOLD	Oil & Grease (HEM)	pH	pH (1:5 Aqueous extract)	Salinity (determined from EC)*	Organochlorine Pesticides	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X										
Brisbane Laboratory - NATA Site # 20794																
External Laboratory																
	0.3															
45	TP09_D3-0.0-0.1	Aug 25, 2016		Soil	M16-Au25611		X									
46	TP09_D3-0.2-0.3	Aug 25, 2016		Soil	M16-Au25612		X									
Test Counts						2	6	2	2	1	2	1	35	1	37	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Volatile Organics							
Naphthalene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	121			70-130	Pass	
TRH C10-C14	%	99			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	109			70-130	Pass	
Toluene	%	106			70-130	Pass	
Ethylbenzene	%	106			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
Xylenes - Total	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH C6-C10	%	119			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
Naphthalene	%	114			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	84			70-130	Pass	
Acenaphthylene	%	101			70-130	Pass	
Anthracene	%	86			70-130	Pass	
Benz(a)anthracene	%	97			70-130	Pass	
Benzo(a)pyrene	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	%	115			70-130	Pass	
Benzo(g.h.i)perylene	%	114			70-130	Pass	
Benzo(k)fluoranthene	%	107			70-130	Pass	
Chrysene	%	83			70-130	Pass	
Dibenz(a.h)anthracene	%	129			70-130	Pass	
Fluoranthene	%	122			70-130	Pass	
Fluorene	%	104			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	124			70-130	Pass	
Naphthalene	%	76			70-130	Pass	
Phenanthrene	%	101			70-130	Pass	
Pyrene	%	114			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	99			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	97			80-120	Pass	
Cadmium	%	99			80-120	Pass	
Chromium	%	95			80-120	Pass	
Copper	%	94			80-120	Pass	
Lead	%	93			80-120	Pass	
Mercury	%	106			75-125	Pass	
Nickel	%	94			80-120	Pass	
Zinc	%	97			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	B16-Au26214	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	B16-Au26214	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Au24539	NCP	%	97			75-125	Pass	
Cadmium	M16-Au24539	NCP	%	93			75-125	Pass	
Chromium	M16-Au24539	NCP	%	94			75-125	Pass	
Copper	M16-Au24539	NCP	%	88			75-125	Pass	
Lead	M16-Au24539	NCP	%	91			75-125	Pass	
Mercury	M16-Au24539	NCP	%	95			70-130	Pass	
Nickel	M16-Au24539	NCP	%	87			75-125	Pass	
Zinc	M16-Au24539	NCP	%	91			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Oil & Grease (HEM)	M16-Au24181	NCP	mg/L	80	90	12	30%	Pass	
pH	M16-Au25576	CP	pH Units	6.5	6.4	pass	30%	Pass	
Salinity (determined from EC)*	M16-Au25576	CP	mg/L	84	84	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	B16-Au26213	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	B16-Au26213	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	B16-Au26213	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	B16-Au26213	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	B16-Au26213	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	B16-Au26213	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au24539	NCP	mg/L	0.006	0.006	1.0	30%	Pass	
Cadmium	M16-Au24539	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M16-Au24539	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Au24539	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	M16-Au24539	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M16-Au24539	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Au24539	NCP	mg/L	0.033	0.035	6.0	30%	Pass	
Zinc	M16-Au24539	NCP	mg/L	< 0.005	0.005	17	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH	M16-Au25577	CP	pH Units	7.1	7.1	pass	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

AU02_USR_LAB00020

From: Andrew Black
Sent: Wednesday, 7 September 2016 11:05 AM
To: AU02_USR_LAB00020
Subject: FW: additional analysis
Attachments: 513416-S_report.pdf

Urgent additional analysis thanks team

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Libby Betz [mailto:LibbyBetz@qualtest.com.au]
Sent: Wednesday, 7 September 2016 11:03 AM
To: Andrew Black
Subject: additional analysis

Hi Andrew,

Can I please have the following TCLP carried out:

BAP - SS2, SS3, SP10-5, SP10-6; and
Arsenic - SP9-5

Can I please have these done on a 2 day TAT.

Thanks

AU25591 - g1043
92 - g1043
AU25570 - g1042
71 - g1042
AU25564 - g1042

7/9
11:05 —
514691

Libby Betz
Senior Environmental Scientist

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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Qualtest**
Contact name:	Libby Betz
Project name:	CESSNOCK
Project ID:	NEW16P-0119A
COC number:	Not provided
Turn around time:	2 Day
Date/Time received:	Sep 7, 2016 11:05 AM
Eurofins | mgt reference:	**514691**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Libby Betz - libbybetz@qualtest.com.au.

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Qualtest	**Order No.:**	
Address:	8 Ironbark Close Warabrook NSW 2304	**Report #:** **Phone:** **Fax:**	514691 02 4968 4468 02 4960 9775
Project Name:	CESSNOCK		
Project ID:	NEW16P-0119A		

Received:	Sep 7, 2016 11:05 AM
Due:	Sep 9, 2016
Priority:	2 Day
Contact Name:	Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Arsenic	Benzo(a)pyrene	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	SS2	Aug 25, 2016		US Leachate	M16-Se05904		X	X
2	SS3	Aug 25, 2016		US Leachate	M16-Se05905		X	X
3	SP10-5	Aug 25, 2016		US Leachate	M16-Se05906		X	X
4	SP10-6	Aug 25, 2016		US Leachate	M16-Se05907		X	X
5	SP9-5	Aug 25, 2016		US Leachate	M16-Se05908	X		X
Test Counts						1	4	5

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Certificate of Analysis

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Libby Betz**

Report **514691-L**
Project name CESSNOCK
Project ID NEW16P-0119A
Received Date Sep 07, 2016

Client Sample ID			**SS2**	**SS3**	**SP10-5**	**SP10-6**
Sample Matrix			**US Leachate**	**US Leachate**	**US Leachate**	**US Leachate**
Eurofins | mgt Sample No.			**M16-Se05904**	**M16-Se05905**	**M16-Se05906**	**M16-Se05907**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
USA Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	6.4	6.0	6.1	6.3
pH (Leachate fluid)	0.1	pH Units	5.1	5.1	5.1	5.1
pH (off)	0.1	pH Units	5.1	5.0	5.1	5.2
pH (USA HCl addition)	0.1	pH Units	1.7	1.7	1.7	1.7

Client Sample ID			**SP9-5**
Sample Matrix			**US Leachate**
Eurofins | mgt Sample No.			**M16-Se05908**
Date Sampled			**Aug 25, 2016**
Test/Reference	LOR	Unit	
Heavy Metals			
Arsenic	0.01	mg/L	< 0.01
USA Leaching Procedure			
Leachate Fluid[C01]		comment	1.0
pH (initial)	0.1	pH Units	6.7
pH (Leachate fluid)	0.1	pH Units	5.0
pH (off)	0.1	pH Units	5.0
pH (USA HCl addition)	0.1	pH Units	1.8

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 08, 2016	7 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Heavy Metals	Melbourne	Sep 07, 2016	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: CESSNOCK
Project ID: NEW16P-0119A

Order No.:
Report #: 514691
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Sep 7, 2016 11:05 AM
Due: Sep 9, 2016
Priority: 2 Day
Contact Name: Libby Betz

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Arsenic	Benzo(a)pyrene	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	SS2	Aug 25, 2016		US Leachate	M16-Se05904		X	X
2	SS3	Aug 25, 2016		US Leachate	M16-Se05905		X	X
3	SP10-5	Aug 25, 2016		US Leachate	M16-Se05906		X	X
4	SP10-6	Aug 25, 2016		US Leachate	M16-Se05907		X	X
5	SP9-5	Aug 25, 2016		US Leachate	M16-Se05908	X		X
Test Counts						1	4	5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.01			0.01	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Benzo(a)pyrene	M16-Se05905	CP	%	79			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Se05938	NCP	%	94			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(a)pyrene	M16-Se05904	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Se05938	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other

Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

AU02_USR_LAB00020

From: Andrew Black
Sent: Wednesday, 7 September 2016 3:30 PM
To: AU02_USR_LAB00020
Subject: FW: Additional Analysis
Attachments: 513416_COC.PDF

Importance: High

Hey mate

When these were logged in there should've been waters and soils labelled with these 2 IDs. Did we find the soils or were these just the waters again?

AU 254498 (H)
499

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Libby Betz [mailto:LibbyBetz@qualtest.com.au]
Sent: Tuesday, 6 September 2016 10:21 AM
To: Andrew Black
Subject: Additional Analysis

Hi Andrew,

As discussed we also collected two sediment samples also labelled WS1 and WS2 but collected into soil jars.

Can I please have these samples analysed for Suite B7 and on a 1 day TAT.

Thanks

7/9
3:30
514745

Libby Betz
Senior Environmental Scientist

Qualtest
LABORATORY (NSW) PTY LTD

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3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Qualtest**
Contact name:	Libby Betz
Project name:	CESSNOCK
Project ID:	NEW16P-0119A
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	Sep 7, 2016 3:30 PM
Eurofins | mgt reference:	**514745**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Libby Betz - libbybetz@qualtest.com.au.

eurofins | mgt

Certificate of Analysis

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Libby Betz**

Report **514745-S**
Project name CESSNOCK
Project ID NEW16P-0119A
Received Date Sep 07, 2016

Client Sample ID			**SED 1**	**SED 2**
Sample Matrix			**Sediment**	**Sediment**
Eurofins | mgt Sample No.			**M16-Se06486**	**M16-Se06487**
Date Sampled			**Aug 25, 2016**	**Aug 25, 2016**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	0.4
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	80	55
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5

Client Sample ID			SED 1	SED 2
Sample Matrix			Sediment	Sediment
Eurofins | mgt Sample No.			M16-Se06486	M16-Se06487
Date Sampled			Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	76	99
p-Terphenyl-d14 (surr.)	1	%	59	91
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
Heavy Metals				
Arsenic	2	mg/kg	5.7	2.5
Cadmium	1	mg/kg	< 1	< 1
Chromium	5	mg/kg	24	17
Copper	5	mg/kg	7.4	7.3
Lead	5	mg/kg	16	11
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	9.9	7.7
Zinc	5	mg/kg	120	50
% Moisture	1	%	51	61

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 07, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Sep 07, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 07, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 07, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 07, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Sep 07, 2016	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Sep 07, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name:	Qualtest	**Order No.:**		**Received:**	Sep 7, 2016 3:30 PM
Address:	8 Ironbark Close Warabrook NSW 2304	**Report #:**	514745	**Due:**	Sep 8, 2016
		Phone:	02 4968 4468	**Priority:**	1 Day
		Fax:	02 4960 9775	**Contact Name:**	Libby Betz
Project Name:	CESSNOCK				
Project ID:	NEW16P-0119A				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	SED 1	Aug 25, 2016		Sediment	M16-Se06486	X	X
2	SED 2	Aug 25, 2016		Sediment	M16-Se06487	X	X
Test Counts						2	2

Internal Quality Control Review and Glossary

General

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mg/l: milligrams per litre

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MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
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RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
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Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 1			1	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	114			70-130	Pass	
TRH C10-C14	%	95			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	114			70-130	Pass	
Toluene	%	107			70-130	Pass	
Ethylbenzene	%	108			70-130	Pass	
m&p-Xylenes	%	108			70-130	Pass	
Xylenes - Total	%	108			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	110			70-130	Pass	
TRH C6-C10	%	109			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	103			70-130	Pass	
Anthracene	%	112			70-130	Pass	
Benz(a)anthracene	%	77			70-130	Pass	
Benzo(a)pyrene	%	79			70-130	Pass	
Benzo(b&j)fluoranthene	%	76			70-130	Pass	
Benzo(g.h.i)perylene	%	74			70-130	Pass	
Benzo(k)fluoranthene	%	80			70-130	Pass	
Chrysene	%	73			70-130	Pass	
Dibenz(a.h)anthracene	%	76			70-130	Pass	
Fluoranthene	%	77			70-130	Pass	
Fluorene	%	97			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	78			70-130	Pass	
Naphthalene	%	97			70-130	Pass	
Phenanthrene	%	93			70-130	Pass	
Pyrene	%	75			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	106			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	98			80-120	Pass	
Cadmium	%	95			80-120	Pass	
Chromium	%	98			80-120	Pass	
Copper	%	102			80-120	Pass	
Lead	%	99			80-120	Pass	
Mercury	%	86			75-125	Pass	
Nickel	%	96			80-120	Pass	
Zinc	%	99			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	B16-Se04625	NCP	%	100			70-130	Pass	
TRH C10-C14	M16-Se05519	NCP	%	89			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	B16-Se04625	NCP	%	111			70-130	Pass	
Toluene	B16-Se04625	NCP	%	104			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ethylbenzene	B16-Se04625	NCP	%	103			70-130	Pass	
m&p-Xylenes	B16-Se04625	NCP	%	103			70-130	Pass	
o-Xylene	B16-Se04625	NCP	%	103			70-130	Pass	
Xylenes - Total	B16-Se04625	NCP	%	103			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	B16-Se04625	NCP	%	111			70-130	Pass	
TRH C6-C10	B16-Se04625	NCP	%	94			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Se02324	NCP	%	90			70-130	Pass	
Acenaphthylene	M16-Se02324	NCP	%	106			70-130	Pass	
Anthracene	M16-Se02324	NCP	%	111			70-130	Pass	
Benz(a)anthracene	M16-Se02324	NCP	%	91			70-130	Pass	
Benzo(a)pyrene	M16-Se02324	NCP	%	96			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Se02324	NCP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	M16-Se02324	NCP	%	96			70-130	Pass	
Benzo(k)fluoranthene	M16-Se02324	NCP	%	92			70-130	Pass	
Chrysene	M16-Se02324	NCP	%	89			70-130	Pass	
Dibenz(a.h)anthracene	M16-Se02324	NCP	%	96			70-130	Pass	
Fluoranthene	M16-Se02324	NCP	%	92			70-130	Pass	
Fluorene	M16-Se02324	NCP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Se02324	NCP	%	99			70-130	Pass	
Naphthalene	M16-Se02324	NCP	%	99			70-130	Pass	
Phenanthrene	M16-Se02324	NCP	%	95			70-130	Pass	
Pyrene	M16-Se02324	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Se05519	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Se03567	NCP	%	89			75-125	Pass	
Cadmium	M16-Se03567	NCP	%	84			75-125	Pass	
Chromium	M16-Se03567	NCP	%	91			75-125	Pass	
Copper	M16-Se03567	NCP	%	99			75-125	Pass	
Lead	M16-Se03567	NCP	%	84			75-125	Pass	
Mercury	M16-Se05519	NCP	%	86			70-130	Pass	
Nickel	M16-Se03567	NCP	%	87			75-125	Pass	
Zinc	M16-Se03567	NCP	%	99			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	B16-Se04623	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M16-Se05518	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Se05518	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M16-Se05518	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	B16-Se04623	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	B16-Se04623	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	B16-Se04623	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	B16-Se04623	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	B16-Se04623	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	B16-Se04623	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	B16-Se04623	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	B16-Se04623	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Se02323	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-Se05518	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Se05518	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Se05518	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Se03566	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	M16-Se03566	NCP	mg/kg	0.5	0.9	51	30%	Fail	Q15
Chromium	M16-Se03566	NCP	mg/kg	52	49	5.0	30%	Pass	
Copper	M16-Se03566	NCP	mg/kg	36	42	17	30%	Pass	
Lead	M16-Se03566	NCP	mg/kg	84	88	5.0	30%	Pass	
Mercury	M16-Se05768	NCP	mg/kg	0.5	0.4	14	30%	Pass	
Nickel	M16-Se03566	NCP	mg/kg	53	54	2.0	30%	Pass	
Zinc	M16-Se03566	NCP	mg/kg	75	96	24	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Se06052	NCP	%	12	13	4.0	30%	Pass	

Quality Control Analyte Summary Compliance

The table below is the actual occurrence of QC performed on the batch of samples within this report and as defined below

Analysis	Samples Analysed	Laboratory Duplicates Reported	Laboratory Matrix Spikes Reported	Method Blanks Reported	Laboratory Control Samples Reported
BTEX	2	1	1	1	1
Total Recoverable Hydrocarbons - 1999 NEPM	2	1	1	1	1
Total Recoverable Hydrocarbons - 2013 NEPM	2	1	1	1	1
Polycyclic Aromatic Hydrocarbons	2	1	1	1	1
Heavy Metals	2	1	1	1	1
% Moisture	2	1	NA	NA	NA

Quality Control Parameter Frequency Compliance follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure April 2011, Schedule B3, Guideline on Laboratory Analysis of Potentially Contaminated Soils and US EPA SW-846 Chapter 1: 'Quality Control'.

It comprises the following when a laboratory process batch is deemed to consist of up to 20 samples that are similar in terms of matrix and test procedure, and are processed as one unit for QC purposes. If more than 20 samples are being processed, they are considered as more than one batch.

Method blank

One method blank per process batch.

Laboratory duplicate

There should be at least one duplicate per process batch, or two duplicates if the process batch exceeds 10 samples.

Laboratory control sample (LCS)

There should be at least one LCS per process batch.

Matrix spikes

There should be one matrix spike per matrix type per process batch.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

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Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.