REPORT TO

HEALTH INFRASTRUCTURE

ON

ADDITIONAL ENVIRONMENTAL SITE ASSESSMENT

FOR

PROPOSED HOSPITAL REDEVELOPMENT

AT

GRIFFITH HEALTH SERVICES, 1 NOOREBAR AVENUE, GRIFFITH, NSW

Date: 25 November 2019
Ref: E30991BTrpt2

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Executive Summary

Health Infrastructure ('the client') commissioned JK Environments (JKE) to undertake an Additional Environmental Site Assessment (AESA) for the proposed hospital redevelopment at Griffith Base Hospital, 1 Noorebar Avenue, Griffith, NSW ('the site'). The site location is shown on Figure 1 and the assessment was generally confined to the northern redevelopment area as shown on Figure 2.

The assessment was limited to the proposed northern redevelopment area only (generally within the proposed Stage 2 Main Building footprint), which occupies a large portion of the northern section of the wider hospital property, as shown on Figure 2. For the purpose of this report, the assessment area has been referred to as 'the site', whilst the whole property has been referred to as 'the wider hospital property'.

JKE have previously undertaken a Preliminary ESA at the site. GHD have previously undertaken a Phase 2 Environmental Site Assessment for the Stage 1 and Stage 2 development areas of the proposed hospital development. A summary of this information has been included in Section 2.

The proposed multi-stage redevelopment will involve the progressive demolition of existing hospital buildings and structures, followed by construction of a new main hospital building and several ancillary services buildings. The development includes construction of a large carparking area at the southern end of the hospital site. The documents provided do not indicate the proposed design levels for pavements or buildings, however, based on the current development and regional topography, cut and fill earthworks would not be expected to exceed a maximum depth/height of approximately 1.5m.

The primary aims of the assessment were to provide additional information for the proposed redevelopment. The assessment objectives were to:

- Review existing site conceptual site model (CSM) based on investigation findings;
- Assess the soil contamination conditions via implementation of a sampling and analysis program;
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Provide a waste classification for off-site disposal of soil;
- Assess whether the site is suitable or remediation is required.

Following a review of the site information and findings of the site walkover, the conceptual site model was updated and identified the following contaminants of potential concern:

- Fill material – The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated. Fill material has been encountered between depths of 0.1m to 0.9m across the site during the current and previous investigations. ACM was encountered in fill in one location (TP124) during the 2018 GHD Stage 1 Development Area assessment (refer to Section2.1.2). Elevated TRH (F3) was encountered in one location (BH107) and FA was encountered in fill in one location (TP122) during the 2018 GHD Stage 2 Development Area assessment (refer to Section 2.1.3);
- Use of pesticides – Based on a review of the previous reports, pesticides may have been used beneath the buildings and/or around the site;
- Electrical substations – The 2018 GHD Stage 2 Development Area assessment identified several electrical substations across the site;
- Fuel storage – Documentation provided in both 2018 GHD reports indicated that three diesel fuel USTs were located in the northern section of the site in the vicinity of the workshop and one AST was potentially located within the boiler house (see Figure 2). Ethyl benzene was detected in the groundwater and volatile organic compounds (VOCs) in the headspace during sampling in BH116 during the 2018 GHD Stage 1 Development Area assessment refer to Section 0). BH116 was considered to be generally downgradient of the location of the USTs and/or maintenance shed (see Figure 2);
- Maintenance Workshop & Gardeners Shed – The EIS 2017 assessment indicated that site included a maintenance workshop and gardeners shed in the northern section (see Figure 2). Groundwater was assessed during both GHD 2018 assessments. VOCs were not detected within the groundwater;
- Historical agricultural use – Site history information presented in the previous assessments indicated that the site may have been used for grazing and market garden purposes. This could have resulted in contamination

across the site via use of machinery, application of pesticides and building/demolition of various structures. Irrigation pipes made from asbestos cement may also be associated with this AEC;

- Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities. The EIS 2017 assessment identified that several buildings constructed prior to 1945 in the central section of the site have been demolished. The GHD 2018 HAZMAT report identified hazardous building materials including asbestos, lead in paint, and SMF in the existing buildings/structures on site (refer to Section 2.1.4); and
- Off-site area 1 – The Metro Petroleum Wyangan petrol filling station was identified in both GHD 2018 assessments to be located approximately 125m to the north-west of the site. JKE do not consider this property to be a potential off-site source of contamination due to the regional topography, the regional geology and the distance from site.

Soil samples were obtained from 17 boreholes drilled for the investigation (BH201-BH217). Elevated concentrations of the CoPC were not encountered above the adopted SAC in any of the soil samples analysed.

Based on the data from the assessment, JKE are of the opinion that potential risks associated with widespread subsurface contamination at the site is low, however localised risks associated with the USTs should be further assessed and remediated accordingly.

JKE consider that the site can be made suitable for the proposed development provided that the following recommendations are implemented to address the data gaps and to better characterise the risks:

1. Development and implementation of a Remediation Action Plan (RAP); and
2. Preparation of a Validation Assessment (VA) report on completion of remediation.

Recommendation 1 can be addressed in the RAP as a data gap investigation prior to remediation.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of this report.

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Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Benzo(a)pyrene Toxicity Equivalent Factor	**BaP TEQ**
Bureau of Meteorology	**BOM**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
Development Application	**DA**
Dial Before You Dig	**DBYD**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Environmental Investigation Services	**EIS**
Ecological Screening Level	**ESL**
Environmental Management Plan	**EMP**
Excavated Natural Material	**ENM**
Environment Protection Authority	**EPA**
Environmental Site Assessment	**ESA**
Ecological Screening Level	**ESL**
Fibre Cement Fragment(s)	**FCF**
General Approval of Immobilisation	**GAI**
Health Investigation Level	**HILs**
Hardness Modified Trigger Values	**HMTV**
Health Screening Level	**HSL**
Health Screening Level-Site Specific Assessment	**HSL-SSA**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
Lab Control Spike	**LCS**
Light Non-Aqueous Phase Liquid	**LNAPL**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Potential ASS	**PASS**
Polychlorinated Biphenyls	**PCBs**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Quality Assurance	**QA**

Quality Control	**QC**
Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Specific Contamination Concentration	**SCC**
Standard Penetration Test	**SPT**
Standard Sampling Procedure	**SSP**
Standing Water Level	**SWL**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
World Health Organisation	**WHO**
Work Health and Safety	**WHS**

Units

Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Millivolts	**mV**
Millilitres	**ml or mL**
Milliequivalents	**meq**
micro Siemens per Centimetre	**µS/cm**
Micrograms per Litre	**µg/L**
Milligrams per Kilogram	**mg/kg**
Milligrams per Litre	**mg/L**
Parts Per Million	**ppm**
Percentage	**%**

1 INTRODUCTION

Health Infrastructure ('the client') commissioned JK Environments (JKE) to undertake an Additional Environmental Site Assessment (AESA) for the proposed hospital redevelopment at Griffith Base Hospital, 1 Noorebar Avenue, Griffith, NSW ('the site'). The site location is shown on Figure 1 and the assessment was generally confined to the northern redevelopment area as shown on Figure 2.

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JKE have previously undertaken a Preliminary ESA at the site. GHD have previously undertaken a Phase 2 Environmental Site Assessment for the Stage 1 and Stage 2 development areas of the proposed hospital development. A summary of this information has been included in Section 2.

A geotechnical investigation was undertaken in conjunction with this assessment by JK Geotechnics (JKG). The results of the investigation are presented in a separate report (Ref: 30991L2rptrpt).

Environmental Investigation Services (EIS) has recently been re-branded to JK Environments and will continue to function as the environmental division of JK Group alongside JK Geotechnics and JK Drilling.

1.1 Proposed Development Details

The proposed multi-stage redevelopment will involve the progressive demolition of existing hospital buildings and structures, followed by construction of a new main hospital building and several ancillary services buildings. The development includes construction of a large carparking area at the southern end of the hospital site. The documents provided do not indicate the proposed design levels for pavements or buildings, however, based on the current development and regional topography, cut and fill earthworks would not be expected to exceed a maximum depth/height of approximately 1.5m.

1.2 Aims and Objectives

The primary aims of the assessment were to provide additional information for the proposed redevelopment. The assessment objectives were to:

- Review existing site conceptual site model (CSM) based on investigation findings;
- Assess the soil contamination conditions via implementation of a sampling and analysis program;
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Provide a waste classification for off-site disposal of soil;
- Assess whether the site is suitable or remediation is required.

1.3 Scope of Work

The assessment was undertaken generally in accordance with a JKE proposal (Ref: EP49846BTRev1) of 17 September 2019 and written acceptance from the client of 4 October 2019. The scope of work included the following:

- Review of Preliminary ESA report prepared by EIS (now JKE) (dated 8 December 2017[1]), Phase 2 ESA report for the Griffith Hospital Stage 1 Development Area prepared by GHD Pty Ltd (GHD), (dated December 2018[2]), Phase 2 ESA report for the Griffith Hospital Stage 2 Development Area prepared by GHD (dated December 2018[3]), and Hazardous Building Materials Assessment prepared by GHD (dated December 2018[4]);
- Preparation of a CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[5], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[6] and State Environmental Planning Policy No.55 – Remediation of Land (1998)[7]. A list of reference documents/guidelines is included in the appendices.

[1] EIS (2018). Report to Health Infrastructure on Preliminary Environmental Site Assessment for Proposed Hospital Upgrade at 5-39 Animoo Avenue, Griffith, (report ref: E30991KH, dated 8 December 2017) (referred to as EIS PESA report 2017).

[2] GHD (2018). NSW Health Infrastructure Griffith Hospital Stage 1 Development Area Phase 2 Environmental Site Assessment, Noorebar Avenue, Griffith, NSW (dated December 2018) (referred to as GHD Stage 1 Development Area Phase 2 ESA report 2018)

[3] GHD (2018). NSW Health Infrastructure Griffith Hospital Stage 2 Development Area Phase 2 Environmental Site Assessment Noorebar Avenue, Griffith, NSW (dated December 2018) (referred to as GHD Stage 2 Development Area Phase 2 ESA report 2018)

[4] GHD (2018). Health Infrastructure, Hazardous Building Materials Assessment, (dated December 2018). (referred to as GHD Hazmat report 2018).

[5] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)

[6] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

[7] *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

2 SITE INFORMATION

2.1 Background

2.1.1 EIS PESA Report 2017

EIS (now JKE) were engaged to undertake a PESA for the wider hospital property in November / December 2017. The ESA included a review of historical site information and soil sampling from 14 boreholes targeted at the proposed development areas.

During the site inspection, the maintenance staff informed the EIS representative that petrol and diesel Underground Storage Tanks (USTs) were located immediately east of the maintenance workshop. No further details regarding the removal of the USTs was available at the time of the assessment.

The following potential contamination sources were identified at the site:

- Fill material across the entire site;
- Fuel storage in the former USTs;
- Fuels, oils and solvents may have been used and stored in the maintenance workshop and gardeners shed;
- The site may have been used for grazing and/or market garden purposes;
- Pesticides may have been used beneath the buildings and/or around the site; and
- Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site. Several buildings that were constructed prior to 1945 in the central section of the site had been demolished.

A total of 14 boreholes were drilled for the assessment. The boreholes typically encountered shallow fill material or natural soil at the surface, underlain by shallow bedrock. Groundwater was not encountered in the boreholes during drilling. The soil analysis results were all less than the SAC.

The areas of highest risk were considered to be the former UST area, the maintenance workshop and gardeners shed. There remains a risk of undiscovered buried asbestos especially in the central section of the site. The report concluded that the site could be made suitable for the proposed development provided that the following recommendations were implemented to address the data gaps and to better manage the risks:

- If an appropriate validation assessment report for the removal of the USTs can be provided this should be reviewed and an addendum letter should be provided summarising the report and assessing the validity of the conclusions in this report. If no validation report can be provided, further assessment of this former UST area will be required;
- Undertake a Hazardous Materials Assessment (Hazmat) for the existing buildings prior to the commencement of demolition work;
- Following site preparation works, the area should be inspected by a contamination consultant in accordance with the unexpected finds procedure outlined in the report; and
- If the suitability of the entire hospital site is to be assessed, further investigation will be required across the wider hospital site.

The figures and summary tables presented in the report have been attached in the appendices.

2.1.2 GHD Stage 1 Development Area Phase 2 ESA report 2018

GHD was engaged to undertake a Phase 2 ESA of the Stage 1 Development Area of Griffith Base Hospital in November/December 2018. The objectives of the ESA were to evaluate the contamination status of the site in relation to the proposed redevelopment, notably relating to potential areas of fill; and to assess whether concentrations of contaminants at the site present a potential risk to human health and/or the environment.

In order to achieve the above objectives, GHD completed a site investigation program that included a review of previously completed reports prepared by EIS (2017) and publically available data on the site and surrounds. Intrusive investigations were undertaken and included the drilling of three boreholes with one converted to a groundwater well, excavation of four test pits and the drilling of seven large diameter boreholes with an excavator. Samples from these locations were then analysed and results compared against adopted criteria from guidelines made or approved by the NSW EPA.

GHD made the following conclusions:

- A thin layer of fill and reworked natural materials was identified across a majority of the Stage 1 development area, however this was observed to be generally free of anthropogenic materials. Two locations were identified to contain asbestos via laboratory analysis, although no visible ACM was observed during sampling;
- Fibrous asbestos (FA) in the form of weathered fibre cement fragments was identified in TP122. The concentration was below the adopted human health SAC. Bonded ACM fragments were identified in TP124. The concentration was above the adopted human health SAC. Based on these results the identified asbestos contamination is considered to present a low risk to human health if managed appropriately;
- Elevated concentrations of cadmium, copper, nickel and zinc were identified in groundwater sampled from BH116 above the freshwater Groundwater Investigation Levels (GILs). These exceedances were considered to be the result of local geological conditions (i.e. representative of 'background' groundwater concentrations) and were not considered to represent a significant contamination issue;
- Concentrations of ethyl benzene marginally above laboratory limit of reporting were also detected in groundwater at BH116, with the headspace volatile screening at the time of sampling recorded a result of 16.6 ppm. These results do not indicate a risk human or ecological receptors, however do provide a line of evidence that may suggest impacts from the nearby USTs (Stage 2 development area) and / or maintenance shed. BH116 was considered to be generally downgradient of the location of the USTs; and
- GHD considered that the works undertaken at the site have sufficiently characterised the site to enable an assessment of its suitability for the proposed purpose (hospital with open space grounds), subject to implementation of the following recommendations.

The report made the following recommendations:

- Development works should include a construction environment management plan (CEMP) containing an asbestos management plan (AMP) and an unexpected finds protocol to identify anthropogenic wastes, remove potential ACM prior to disturbance for appropriate disposal, and separate any wastes that are not acceptable for aesthetic or other reasons, for either management (e.g. emplacement in deeper fill) or disposal. Should unexpected contaminated soils be identified during any future ground works, advice should be sought from a suitably qualified environmental consultant;

- Only limited sampling was possible in the Stage 1 Development Area, due to the presence of buildings. It is understood that demolition of additional buildings is planned as part of the Stage 1 works. Given the former presence of historical buildings in this area, and the constraints to sampling during this investigation, GHD recommended further assessment once the additional buildings are demolished and removed;
- The current or former location of the USTs should be clarified with respect to the site boundary and ownership or responsibility for the USTs defined; and
- Further assessment of shallow groundwater should be considered in the immediate vicinity of the USTs as there is a line of evidence that indicates potential contamination in this area.

BH116, TP122 and TP124 are all located within the current site.

The figures and summary tables presented in this report have been attached in the appendices.

2.1.3 GHD Stage 2 Development Area Phase 2 ESA report 2018

GHD was engaged to undertake a Phase 2 ESA of the Stage 2 Development Area of Griffith Base Hospital in November/December 2018. The objectives of the Phase 2 ESA were to evaluate the contamination status of the site in relation to the proposed redevelopment, notably relating to the former fuel underground storage tanks and potential areas of fill; and to assess whether concentrations of contaminants at the site presented a potential risk to human health and/or the environment.

In order to achieve the above objectives, GHD completed a site investigation program that included a review of previously completed reports prepared by EIS (2017) and publically available data on the site and surrounds. Intrusive investigations were undertaken and included the drilling of three boreholes, excavation of two test pits and the drilling of 17 large diameter boreholes with an excavator. Samples from these locations were then analysed and results compared against adopted criteria from guidelines made or approved by the NSW EPA.

GHD made the following conclusions:

- A layer of fill and reworked natural materials was identified across a majority of the Stage 2 development area with the greatest thickness of this material located in the north of the site beneath the northern carpark. This material was observed to be generally free of anthropogenic materials with the exception of a fragment of ceramic tile located in IP140;
- One fill soil sample BH107 (0.05-0.2) reported an elevated TRH (F3) concentration of 390mg/kg, which exceeded the adopted ecological SAC of 300 mg/kg. The source was considered likely to be a result of an isolated (top-down) spill or potential biological source; and
- GHD considered that the works undertaken at the site sufficiently characterised the site to enable an assessment of its suitability for the proposed purpose (hospital with open space grounds), subject to implementation of the following recommendations.

The report made the following recommendations:

- Any development works undertaken within the Stage 2 area should include a construction environment management plan (CEMP) containing an unexpected find protocol to identify

anthropogenic wastes, remove potential ACM prior to disturbance for appropriate disposal, and separate any wastes that are not acceptable for aesthetic or other reasons, for either management (e.g. emplacement in deeper fill) or disposal. Should unexpected contaminated soils be identified during any future ground works, advice should be sought from a suitably qualified environmental consultant;

- The current or former location of the USTs should be clarified with respect to the site boundary and ownership or responsibility for the USTs defined; and
- Further assessment of shallow groundwater should be considered in the immediate vicinity of the USTs as there is a line of evidence that indicates potential contamination in this area.

The figures and summary tables presented in this report have been attached in the appendices.

2.1.4 GHD HAZMAT report 2018

GHD was engaged to complete pre-demolition hazardous building materials assessments and compile a register for 14 of the 29 buildings and structures (referred to as assets) located at Griffith Base Hospital (the site).

Both bonded and friable asbestos was identified at the site during the assessment. Synthetic mineral fibre (SMF) containing materials, lead based paint, capacitors containing polychlorinated biphenyls (PCBs), and ozone depleting substances were also identified throughout the site.

2.2 Site Identification

Table 2-1: Site Identification

Site Address:	1 Noorebar Avenue, Griffith, NSW
Lot & Deposited Plan:	Lot 2 DP 1043580
Current Land Use:	Hospital
Proposed Land Use:	Continued use as a hospital
Local Government Authority:	Griffith City Council
Current Zoning:	R1 - General Residential
Site Area (m^2):	Northern Development area: 22,400 Total hospital site: 64,000
RL (AHD in m) (approx.):	136.8-141.3
Geographical Location (decimal degrees) (approx.):	Latitude: -34.2820 Longitude: 146.0437

Site location and regional setting:	The site is located within the wider hospital property grounds. The wider hospital property is located in a predominantly residential area of Griffith. The wider hospital property is bounded by local roads and by the Private Hospital to the north and medical centre to the west, within the local roads. The wider hospital property is located approximately 750m to the north of a concrete lined canal that runs east-west through Griffith.
Topography:	The site and wider hospital property is located within undulating to hilly local topography associated with the Griffith Syncline and McPhersons Range Anticline. The site and wider hospital property is situated mid-slope on a hill which falls to the south at approximately 3°. The site itself falls to the south-west at a similar grade.
Geology:	Regional geological information reviewed for the assessment indicated that the site and wider hospital property is underlain by Barrat Conglomerate of the Cocoparra Group, which typically consists of conglomerate, pebbly sandstone, lithic sandstone, sandstone and siltstone.
Acid Sulfate Soils:	The site and wider hospital property is not located in an acid sulfate soil (ASS) risk area according to the risk maps prepared by the Department of Land and Water Conservation.
Hydrogeology:	Hydrogeological information reviewed for the assessment indicated that the regional aquifer on-site and in the areas immediately surrounding the wider hospital property includes fractured or fissured, extensive aquifers of low to moderate productivity. During the EIS PESA assessment, a total of 33 registered bores were noted within 2km of the wider hospital property. All of the bores were registered for monitoring purposes, with the nearest located approximately 350m to the east of the wider hospital property. Standing water levels (SWLs) in the bores within 1,000m ranged from approximately 2.6mBGL to 3.85mBGL. The information reviewed for this assessment indicated that the subsurface conditions at the site and wider hospital property are likely to consist of residual soils overlying relatively shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low. Use of groundwater is not proposed as part of the development.
Receiving Water Bodies:	Surface water bodies were not identified in the immediate vicinity of the site and wider hospital property. The closest surface water body is the concrete lined Main Canal located approximately 750m to the south of the wider hospital property.
Surrounding Land Use:	During the 2017 site inspection, EIS observed the following land uses in the immediate surrounds of the wider hospital property: • North – St Vincent's Private Community Hospital, with a residential area beyond. A service station was located approximately 130m north-west of the site; • South – a residential area that included a child care centre. The area extended to the town centre that included a railway line and station and a shopping centre; • East – a primary school and parkland; and • West – a residential area that typically included houses.

	In 2017, EIS did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site. The former USTs located adjacent to the maintenance workshop may have represented a potential contamination source prior to removal. No details were available regarding the removal and/or validation works. The service station (Metro Petroleum Wyangan petrol filling station), located to the north-west is considered unlikely to represent a potential off-site contamination source due to the distance from the site and the cross-gradient location from the site.

2.3 Current Site Description

JKE did not conduct a walkover inspection at the time of this assessment. However, information provided by JK Geotechnics during the fieldwork indicated that the site is relatively similar to the description as presented in the EIS PESA report 2017, and both 2018 GHD reports.

2.4 Site History Summary

A time line summary of the historical land uses and activities is presented in the table below. The information presented in the table is based on a weight of evidence assessment of the information presented in the EIS PESA report 2017, the GHD Stage 1 Development Area Phase 2 ESA report 2018, the GHD Stage 2 Development Area Phase 2 ESA report 2018 and the GHD HAZMAT report 2018.

Table 2-2: Summary of Historical Land Uses and Activities

Year(s)	Potential Land Use / Activities	Supporting Evidence
Pre-1935	Crown land	Land titles indicated the property was crown land prior to 1935.
1935 to present	• Hospital land use; • Potential filling of the site may have occurred during the progressive development of the site; • Construction of buildings; • Potential hazardous building materials within existing buildings/structures; • Installation of three diesel fuel USTs in the north of the site; and • Potential installation of 5,000 gallon oil fuel aboveground storage tank (AST).	• Land titles indicated the site was dedicated as a hospital site in 1934; • Aerial photographs indicated that the central section of the site had been developed by 1945 and additional development and redevelopment was undertaken until the 1980's; and • The UST plans and documents presented in both 2018 GHD reports indicated that three USTs were located in the north of the site and an oil fuel tank (AST) was potentially located within the boiler plant.
Sometime between 2015 to 2017	• Potential filling of the site may have occurred during development of the private hospital and construction of the asphaltic concrete road along the northern boundary; • Removal of diesel fuel from USTs; and • Potential decommissioning of USTs.	• Aerial photographs and inspection findings during the 2017 site walkover indicated that northern section of the site had undergone some development during construction of the neighbouring private hospital; and • The UST plans and documents presented in both 2018 GHD reports indicated that a quote had been obtained in 2005 for the removal of surplus diesel fuel from the

Year(s)	Potential Land Use / Activities	Supporting Evidence
		USTs and for the abandonment of the USTs using stabilizing mix in-situ. An undated invoice was also included addressed to the same company for the recoup of money owed to Greater Southern Area Health Service for the sale of surplus fuel from the Griffith Base Hospital site.

3 CONCEPTUAL SITE MODEL

3.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 3-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
Fill material – The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated. Fill material has been encountered between depths of 0.1m to 0.9m across the site during the current and previous investigations. ACM was encountered in fill in one location (TP124) during the 2018 GHD Stage 1 Development Area assessment (refer to Section2.1.2). Elevated TRH (F3) was encountered in one location (BH107) and FA was encountered in fill in one location (TP122) during the 2018 GHD Stage 2 Development Area assessment (refer to Section 2.1.3).	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
Use of pesticides – Based on a review of the previous reports, pesticides may have been used beneath the buildings and/or around the site.	Heavy metals and OCPs
Electrical substations – The 2018 GHD Stage 2 Development Area assessment identified several electrical substations across the site.	PCBs
Fuel storage – Documentation provided in both 2018 GHD reports indicated that three diesel fuel USTs were located in the northern section of the site in the vicinity of the workshop and one AST was potentially located within the boiler house (see Figure 2). Ethyl benzene was detected in the groundwater and volatile organic compounds (VOCs) in the headspace during sampling in BH116 during the 2018 GHD Stage 1 Development Area assessment (refer to Section 2.1.2). BH116 was considered to be generally downgradient of the location of the USTs and/or maintenance shed (see Figure 2).	Heavy metals, TRH, BTEX and PAHs
Maintenance Workshop & Gardeners Shed – The EIS 2017 assessment indicated that site included a maintenance workshop and gardeners shed in the northern section (see Figure 2). Groundwater was assessed during both GHD 2018 assessments. VOCs were not detected within the groundwater.	Heavy metals, TRH, BTEX, VOCs possibly including chlorinated solvents such as trichloroethylene (TCE) which is commonly used as a degreaser.

Source / AEC	CoPC
Historical agricultural use – Site history information presented in the previous assessments indicated that the site may have been used for grazing and market garden purposes. This could have resulted in contamination across the site via use of machinery, application of pesticides and building/demolition of various structures. Irrigation pipes made from asbestos cement may also be associated with this AEC.	Heavy metals, TRH, PAHs, OCPs, PCBs and asbestos
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities. The EIS 2017 assessment identified that several buildings constructed prior to 1945 in the central section of the site have been demolished. The GHD 2018 HAZMAT report identified hazardous building materials including asbestos, lead in paint, and SMF in the existing buildings/structures on site (refer to Section 2.1.4).	Asbestos, lead and PCBs
Off-site area 1 – The Metro Petroleum Wyangan petrol filling station was identified in both GHD 2018 assessments to be located approximately 125m to the north-west of the site. JKE do not consider this property to be a potential off-site source of contamination due to the regional topography, the regional geology and the distance from site.	Heavy metals, TRH, BTEX and PAHs

3.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 3-2: CSM

Potential mechanism for contamination	Potential mechanisms for contamination include: • Fill material – importation of impacted material, 'top-down' impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material); • Use of pesticides – 'top-down' and spills (e.g. during normal use, application and/or improper storage); • Sub stations - 'top-down' (e.g. during normal use); • Fuel storage – 'top-down', spills (e.g. leaking tanks, during filling of the tanks and/or dispensing activities), or sub-surface release (e.g. from leaking tanks or pipework); • Maintenance Workshop & Gardeners Shed - 'top-down', spills (e.g. leaks through cracks in the pavement), or sub-surface release (e.g. from leaking USTs and associated infrastructure);

	• Historical agricultural use – 'top-down' and spills (e.g. application of pesticides, refuelling or repairing machinery, and other activities at the ground surface level); and • Hazardous building materials – 'top-down' (e.g. demolition resulting in surficial impacts in unpaved areas).
Affected media	Soil/soil vapour and groundwater have been identified as potentially affected media. For this assessment, sampling was limited to soil media.
Receptor identification	Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users (residential and other medical). Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas).
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings and basements. There is considered to be a low potential for groundwater to migrate to the Main Canal due to the distance of this surface water body from the site. Nevertheless, risks associated with this potential receptor and exposure pathway have been considered.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed building (either from soil contamination or volatilisation of contaminants from groundwater); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Migration of groundwater off-site, including into nearby water bodies.
Presence of preferential pathways for contaminant movement	The backfill around the former or existing USTs (Figure 2) and any buried infrastructure is a potential preferential pathway for contaminant migrations. This could occur via groundwater/seepage if present, or via soil/vapour migration through the trench backfill.

4 SAMPLING, ANALYSIS AND QUALITY PLAN

4.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013) and the Guidelines for the NSW Site Auditor Scheme, 3rd Edition (2017)[8]. The seven-step DQO approach for this project is outlined in the following sub-sections.

The DQO process is validated in part by the Data Quality Assurance/Quality Control (QA/QC) Evaluation. The Data (QA/QC) Evaluation is summarised in Section 6.4 and the detailed evaluation is provided in the appendices.

4.1.1 Step 1 - State the Problem

The CSM identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. Investigation data is required to assess the contamination status of the site, assess the risks posed by the contaminants in the context of the proposed development/intended land use, and assess whether remediation is required.

A waste classification is required prior to off-site disposal of excavated soil/bedrock.

The assessment was constrained in-part, by access limitations associated with the existing structures on site, and by information provided by the client after the commencement of fieldwork (GHD 2018 reports).

4.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the assessment are outlined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Are any results above the SAC?
- Do potential risks associated with contamination exist based on the assessment findings, and if so, what are they?
- Is remediation required?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

4.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing relevant environmental data from previous reports;
- Sampling of soil;
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, odours and staining;

[8] NSW EPA (2017). *Guidelines for the NSW Site Auditor Scheme, 3rd ed.* (referred to as Site Auditor Guidelines 2017)

- Laboratory analysis of soils for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

4.1.4 Step 4 - Define the Study Boundary

The sampling was confined to the site boundaries as shown in Figure 2 (spatial boundary). The sampling was completed between 15 and 17 October 2019 (temporal boundary). A site inspection was not undertaken as part of this assessment. Therefore, the current assessment of potential on-site risk has been made based on the previous EIS and GHD assessment findings and data collected within the site and wider hospital property boundary. The assessment of potential risk to adjacent land users has been made based on data collected within the site and wider hospital property boundary.

Sampling was not undertaken within the existing building footprints due to access constraints.

We note that the scope and analytical schedule were pre-defined prior to the commencement of the assessment and not all media (i.e. soil vapour and groundwater) or CoPC (i.e.VOCs) were included in the analytical schedule.

4.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

4.1.5.1 Tier 1 Screening Criteria

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 5. Exceedances of the SAC do not necessarily indicate a requirement for remediation or a risk to human health and/or the environment. Exceedances are considered in the context of the CSM and valid SPR-linkages.

For this assessment, the individual results have been assessed as either above or below the SAC. Statistical evaluation of the dataset via calculation of mean values and/or 95% upper confidence limit (UCL) values has not been undertaken due to the spatial distribution of the data and the number of samples submitted for analysis.

4.1.5.2 Field and Laboratory QA/QC

Field QA/QC included analysis of inter-laboratory duplicates, intra-laboratory duplicates, and trip blank samples. Further details regarding the sampling and analysis undertaken, and the acceptable limits adopted, is provided in the Data Quality (QA/QC) Evaluation in the appendices.

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the attached laboratory reports. These criteria were developed and implemented in accordance with the laboratory's National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence are reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, JKE typically adopt the most conservative concentration reported (or in some cases, consider the data from the affected sample as an estimate).

4.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are considered in relation to the SAC to confirm that the PQLs are less than the SAC. In cases where the PQLs are greater than the SAC, a discussion of this is provided.

4.1.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results is undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected.

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this assessment, the null hypothesis has been adopted which is that, there is considered to be a complete SPR linkage for the CoPC identified in the CSM unless this linkage can be proven not to (or unlikely to) exist. The null hypothesis has been adopted for this assessment.

4.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the assessment objectives. Adjustment of the assessment design can occur following consultation or feedback from project stakeholders. For this investigation, the design was optimised via consideration of the various lines of evidence used to select the sample locations, the media being sampled, and also by the way in which the data were collected.

The sampling plan and methodology are outlined in the following sub-sections.

4.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this assessment is outlined in the table below:

Table 4-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	For this assessment, samples were collected from 17 locations (BH201 to BH217) as shown on the attached Figure 2. Based on the northern development area (22,400m^2), this number of locations corresponded to a sampling density of approximately one sample per 1,318m^2. The sampling plan was not designed to meet the minimum sampling density for hotspot identification, as outlined in

Aspect	Input
	the NSW EPA Contaminated Sites Sampling Design Guidelines (1995)[9]. This was in part due to the access limitations associated with the existing buildings and the information required to informal the structural design of the proposed buildings..
Sampling Plan	The sampling locations were placed on a judgemental sampling plan and were broadly positioned for site coverage, taking into consideration areas that were not easily accessible. This sampling plan was considered suitable to provide additional data for assessment of potential risks associated with the AEC and CoPC identified in the CSM, and assess whether further investigation/remediation is warranted.
Set-out and Sampling Equipment	Sampling locations were set out using a tape measure. In-situ sampling locations were cleared for underground services by an external contractor prior to sampling as outlined in the standard sampling procedure (SSP) attached in the appendices. Samples were collected using a drill rig equipped with spiral flight augers. Soil samples were obtained from a Standard Penetration Test (SPT) split-spoon sampler, or directly from the auger when conditions did not allow use of the SPT sampler.
Sample Collection and Field QA/QC	Soil samples were obtained between 15 and 17 October 2019 in accordance with the SSP. Soil samples were collected from the fill and natural profiles based on field observations. The sample depths are shown on the logs attached in the appendices. Samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis.
Field Screening	A portable Photoionisation Detector (PID) fitted with a 10.6mV lamp was used to screen the samples for the presence of volatile organic compounds (VOCs). PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases. PID calibration records are maintained on file by JKE. Fill/spoil at the sampling locations was visually inspected during the works for the presence of fibre cement fragments.
Decontami-nation and Sample Preservation	Sampling personnel used disposable nitrile gloves during sampling activities. Re-usable sampling equipment was decontaminated as outlined in the SSP. Soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with the SSP. On completion of the fieldwork, the samples were stored temporarily in fridges in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

4.3 Analytical Schedule

The analytical schedule (for primary samples) is outlined in the following table:

[9] NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines.* (referred to as EPA Sampling Design Guidelines 1995)

Table 4-2: Analytical Schedule (Primary Samples)

Analyte/CoPC	Fill Samples	Natural Soil Samples
Heavy Metals	14	3
TRH/BTEX	14	3
PAHs	14	3
OCPs/OPPs	14	3
PCBs	14	3
Asbestos	14	3
Cation Exchange Capacity (CEC)	5	-
Toxicity characteristic leachate procedure (TCLP) Metals for waste classification purposes	5	-

4.3.1 Laboratory Analysis

Samples were analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 4-3: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates and trip blank samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	228853 and 228853-A
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	18650

5 SITE ASSESSMENT CRITERIA (SAC)

The SAC were derived from the NEPM 2013 and other guidelines as discussed in the following sub-sections. The guideline values for individual contaminants are presented in the attached report tables and further explanation of the various criteria adopted is provided in the appendices.

5.1 Soil

Soil data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013) as outlined below.

5.1.1 Human Health

- Health Investigation Levels (HILs) for a 'residential with accessible soils' exposure scenario (HIL-A);
- Health Screening Levels (HSLs) for a 'low-high density residential' exposure scenario (HSL-A & HSL-B). HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- Where exceedances of the HSLs were reported for hydrocarbons (TRH/BTEX and naphthalene), the soil health screening levels for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)[10] were considered; and
- Asbestos was assessed on the basis of presence/absence. Asbestos HSLs were not adopted as detailed asbestos quantification was not undertaken.

5.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an 'urban residential and public open space' (URPOS) exposure scenario. These have only been applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene has been increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines[11];
- ESLs were adopted based on the soil type; and
- With the exception of five fill samples from BH207, BH208, BH213, BH214 and BH216, EILs for selected metals were calculated based on the most conservative added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013) and published ambient background concentration (ABC) values presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[12]. EILs for nickel in BH207 (0.05-0.1m), BH208 (0.1-0.2m), BH213 (0.1-0.2m), BH214 (0.1-0.2m) and BH216 (0.1-0.3m) were calculated using site specific soil parameters for cation exchange capacity. These data were used to select the ACL values presented in Schedule B(1) of NEPM (2013), and published ABC presented in the document titled Trace Element Concentrations in Soils

[10] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - *Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document*

[11] Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

[12] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

from Rural and Urban Areas of Australia (1995). This method is considered to be adequate for the Tier 1 screening.

5.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) were considered (if required) following evaluation of human health and ecological risks, and risks to groundwater.

5.1.4 Waste Classification

Data for the waste classification assessment were assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[13] as outlined in the following table:

Table 5-1: Waste Categories

Category	Description
General Solid Waste (non-putrescible)	• If Specific Contaminant Concentration (SCC) ≤ Contaminant Threshold (CT1) then Toxicity Characteristics Leaching Procedure (TCLP) not needed to classify the soil as general solid waste; and • If TCLP ≤ TCLP1 and SCC ≤ SCC1 then treat as general solid waste.
Restricted Solid Waste (non-putrescible)	• If SCC ≤ CT2 then TCLP not needed to classify the soil as restricted solid waste; and • If TCLP ≤ TCLP2 and SCC ≤ SCC2 then treat as restricted solid waste.
Hazardous Waste	• If SCC > CT2 then TCLP not needed to classify the soil as hazardous waste; and • If TCLP > TCLP2 and/or SCC > SCC2 then treat as hazardous waste.
Virgin Excavated Natural Material (VENM)	Natural material (such as clay, gravel, sand, soil or rock fines) that meet the following: • 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; • That does not contain sulfidic ores or 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.

[13] NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

6 RESULTS

6.1 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the following table. Reference should be made to the borehole logs attached in the appendices for further details.

Table 6-1: Summary of Subsurface Conditions

Profile	Description
Pavement	Concrete pavement was encountered at the surface in BH208 only, and was approximately 30mm in thickness.
Fill	Fill was encountered at the surface or beneath the pavement in BH201 through BH209, and BH212 through BH217 and extended to depths of approximately 0.1m to 0.9mBGL. The fill typically comprised silty clay, silty gravel and clayey silt with inclusions of igneous gravel, root fibres and sandstone gravel. Neither staining nor odours were observed in the fill material during the field work. Asbestos containing materials were not encountered in the fill material during the field work.
Natural Soil	With the exception of BH209, natural residual silty clay or clayey silt soils were encountered beneath the fill material and extended to depths of between approximately 0.2m to 1.6mBGL. Neither staining nor odours were observed in the natural soils during the field work.
Bedrock	Siltstone or sandstone bedrock was encountered in BH201, BH202, BH203, BH205, BH206, BH207, BH209, BH2010, BH213, BH215 and BH217 beneath the fill or natural soils from depths of 0.3m to 0.8mBGL. Neither staining nor odours were observed in the bedrock during the field work.
Groundwater	Groundwater seepage was not encountered in the boreholes during drilling. All boreholes remained dry on completion of drilling and a short time after.

6.2 Field Screening

PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. All results were 0ppm isobutylene equivalents which indicates a lack of PID detectable VOCs.

6.3 Soil Laboratory Results

The soil laboratory results are compared to the relevant SAC in the attached report tables. A summary of the results assessed against the SAC is presented below:

6.3.1 Human Health and Environmental (Ecological) Assessment

Table 6-2: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	Results Compared to SAC
Heavy Metals	All heavy metals results were below the SAC.
TRH	All TRH results were below the SAC.
BTEX	All BTEX results were below the SAC.
PAHs	All PAH results were below the SAC.
OCPs and OPPs	All OCP and OPP results were below the SAC. All pesticide concentrations were below the laboratory PQLs.
PCBs	All PCB results were below the SAC. All PCB concentrations were below the laboratory PQLs.
Asbestos	All asbestos results were below the SAC (i.e. asbestos was absent in the samples analysed for the investigation).

6.3.2 Management Limits

Table 6-3: Summary of Soil Laboratory Results – Management Limits

Analyte	Results Compared to SAC
TRH	All TRH results were below the SAC.

6.3.3 Waste Classification Assessment

The laboratory results were assessed against the criteria presented in Part 1 of the Waste Classification Guidelines, as summarised previously in this report. A summary of the results is presented in the following table:

Table 6-4: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	No. of Samples Analysed	No. of Results > CT Criteria	No. of Results > SCC Criteria	Comments
Heavy Metals	17	5	0	Nickel concentrations exceeded the CT1 criterion in five fill samples collected from BH207 (0.05-0.1m), BH208 (0.1-0.2m), BH213 (0.1-0.2m), BH214 (0.1-0.2m) and BH216 (0.1-0.2m). The maximum lead concentration was 170mg/kg.
TRH	17	0	0	-
BTEX	17	0	0	-
Total PAHs	17	0	0	-

Analyte	No. of Samples Analysed	No. of Results > CT Criteria	No. of Results > SCC Criteria	Comments
Benzo(a)pyrene	17	0	0	-
OCPs & OPPs	17	0	0	-
PCBs	17	0	0	-
Asbestos	17	-	-	Asbestos was not detected in the samples analysed.

Table 6-5: Summary of Soil Laboratory Results Compared to TCLP Criteria

Analyte	No. of Samples Analysed	No. of Results > TCLP Criteria	Comments
Nickel	5	0	-

6.4 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In summary, JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

7 WASTE CLASSIFICATION ASSESSMENT

The following waste classification does not apply to material around the USTs. Further assessment will be required prior to classification of this material.

7.1 Preliminary Classification of Fill

Based on the results of the assessment, at the time of reporting, the fill material at the site outside of the UST areas is given a preliminary classification of **General Solid Waste (non-putrescible) containing Special Waste (asbestos)**. This classification should be confirmed via inspection of the site surface in building footprints following demolition and additional soil sampling at the site as recommended in Section 9.

Fill should be disposed of to a facility that is appropriately licensed by the NSW EPA to receive this waste stream. The facility should be contacted to obtain the required approvals prior to commencement of excavation.

7.2 Classification of Natural Soil and Bedrock

Further assessment will be required to classify natural soil in the vicinity of the former USTs.

Based on the scope of work undertaken for this assessment, and at the time of reporting, JKE are of the opinion that the natural soil and bedrock at the site are likely to meet the definition of **VENM** for off-site disposal or re-use purposes. This VENM classification should be confirmed via visual inspection following removal of fill material.

In accordance with Part 1 of the Waste Classification Guidelines, the VENM is pre-classified as general solid waste and can also be disposed of accordingly to a facility that is licensed to accept it.

8 DISCUSSION

8.1 Tier 1 Risk Assessment and Review of CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

8.1.1 Soil

Elevated concentrations of CoPC were not encountered above the adopted SAC in any of the soil samples analysed for this assessment.

No asbestos containing materials were encountered in the fill material at the site during the field work. No asbestos was detected in any of the soil samples analysed. Sampling was completed from boreholes using auger drilling methods which limits the disturbance of the soil. Fill at the site was observed to be generally free from anthropogenic inclusions. However, it is noted that during the Stage 1 Development Area GHD 2018 assessment, two locations were identified to contain asbestos via laboratory analysis, although no visible ACM was observed during sampling. Fibrous asbestos (FA) in the form of weathered fibre cement fragments was identified in TP122 which was below the adopted human health SAC, and bonded ACM fragments were identified in TP124 with the concentration calculated to be above the adopted human health SAC. There is considered to be a complete SPR linkage for asbestos at the site if the fill is not managed appropriately during development. Based on these results, the identified asbestos contamination is considered to present a low risk to human health if managed appropriately.

In addition, during the Stage 2 Development Area GHD 2018 assessment, one fill soil sample from BH107 (0.05-0.2) reported an elevated TRH (F3) concentration of 390mg/kg, which exceeded the adopted ecological SAC of 300 mg/kg. The source was considered likely to be a result of an isolated (top-down) spill or potential biological source. The elevated concentration of TRH F3 is not considered to pose an unacceptable risk to ecological site receptors for the following reasons:

- The site is not located in an ecological sensitive area which could impact any endangered species on site;
- The proposed development will extent to this area of the site and reduce future exposure to any existing flora and fauna; and
- The existing flora did not show any significant signs of stress or dieback.

8.2 Decision Statements

The decision statements are addressed below:

Are any results above the SAC?

None of the results from this assessment were above the SAC. However, elevations above the SAC were noted in the previous investigations.

Do potential risks associated with contamination exist, and if so, what are they?

Yes. ACM encountered in fill during the previous GHD assessment will require remediation/management to reduce risks to an acceptable level in the context of the proposed development. There is also potential for residual contamination to be present in the vicinity of the USTs. Areas beneath the existing buildings and structures have not been included in the assessment.

Is remediation required?

Remediation of the ACM in fill and the USTs will be required.

Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

JKE are of the opinion that the site can be made suitable for the proposed development, subject to the implementation of a remediation action plan (RAP).

8.3 Data Gaps

An assessment of data gaps is provided in the following table:

Table 8-1: Data Gap Assessment

Data Gap	Assessment
Areas beneath the existing buildings and structure on the site have not been assessed.	Sampling beneath the existing buildings and structures at the site was not undertaken due to accessibility and the preliminary nature of the assessment. Recommendations are included in Section 9 of the report to address this data gap.
The extent of any associated underground pipework and any residual contamination associated with the USTs (tank pit backfill soils and or water) has not been fully assessed	Sampling was not undertaken in the tank pit area due to the preliminary nature of the assessment. Residual contamination is likely to be localised to the tank pit soils/waters and any soils/waters around underground pipework or associated infrastructure. Recommendations are included in **Section 9** of the report to address this data gap.

The investigation was limited due to access restrictions imposed by the existing buildings and structures. The above data gaps can be addressed as an additional (data gap) investigation prior to remediation of the site.

9 CONCLUSIONS AND RECOMMENDATIONS

Based on the data from the assessment, JKE are of the opinion that potential risks associated with widespread subsurface contamination at the site is low, however localised risks associated with the USTs should be further assessed and remediated accordingly.

JKE consider that the site can be made suitable for the proposed development provided that the following recommendations are implemented to address the data gaps and to better characterise the risks:

1. Development and implementation of a Remediation Action Plan (RAP); and
2. Preparation of a Validation Assessment (VA) report on completion of remediation.

At this stage, JKE consider that, provided the above recommendations are addressed, there is no requirement to report any site contamination to the NSW EPA under the NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[14].

JKE consider that the report objectives outlined in Section 1.2 have been addressed.

[14] NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997* (referred to as Duty to Report Contamination)

10 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors
This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions
Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data
Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Assessment Limitations
Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Assessments by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Assessment Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

Appendix A: Report Figures

0 25 50 75 100 125

SCALE 1:2500 @A4 m

This plan should be read in conjunction with the Environmental report.

Title: **SITE LOCATION PLAN**

Location: GRIFFITH REGIONAL HEALTH SERVICE, 1 NOOREBAR AVE GRIFFITH, NSW

Report No: E30991BT

Figure: 1

JKEnvironments

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LEGEND

APPROXIMATE SITE BOUNDARY

WIDER HOSPITAL PROPERTY BOUNDARY

BH201(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) BH201 TO BH217 WERE DRILLED AS PART OF THE CURRENT JKE INVESTIGATION.

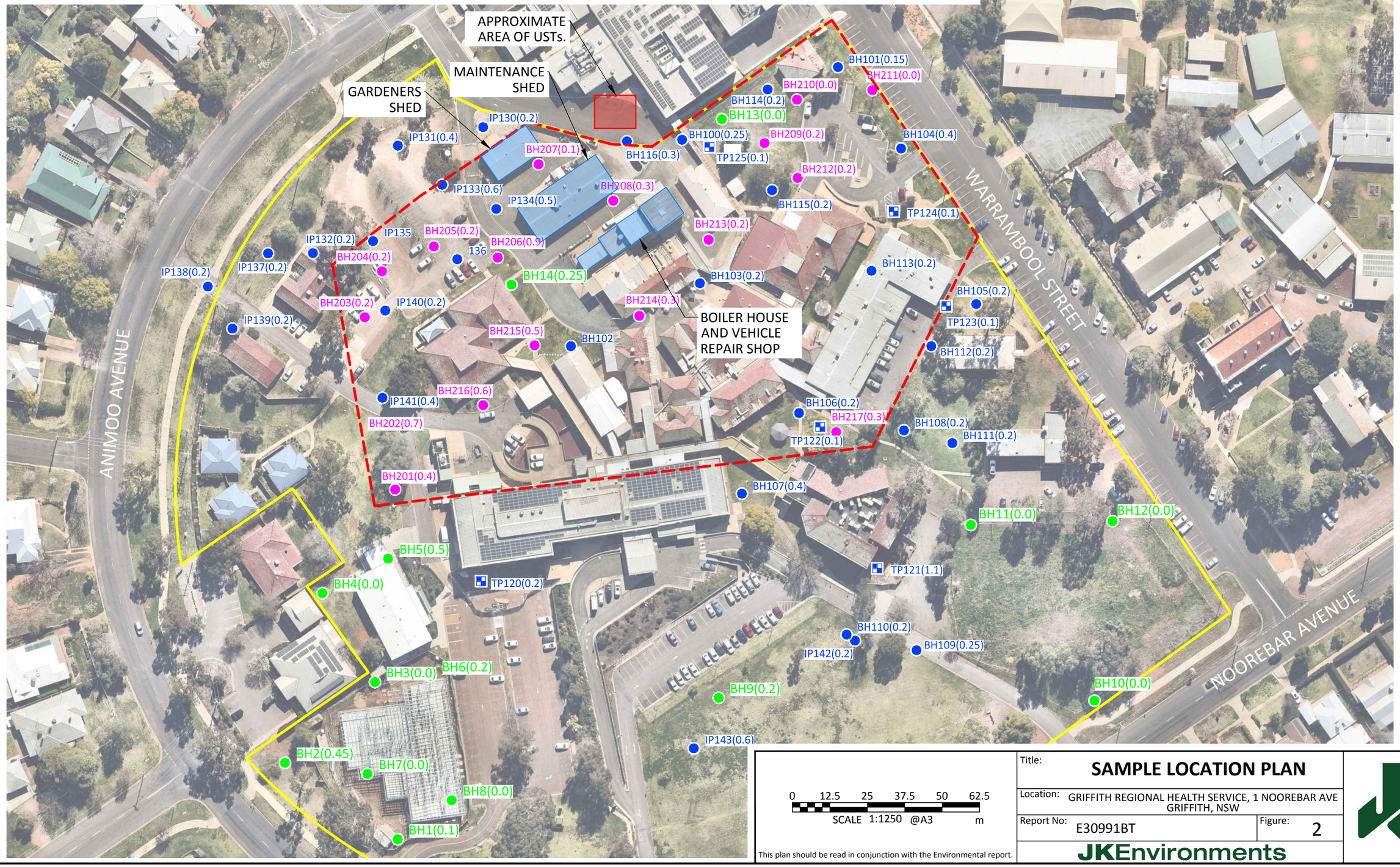
BH101(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) BH100 TO BH116 DRILLED AS PART OF THE 2018 GHD INVESTIGATIONS.

BH116(m) GROUNDWATER MONITORING WELL LOCATIONS, NUMBER AND DEPTH OF FILL (M) BH116 TO DRILLED AS PART OF THE 2018 GHD INVESTIGATIONS.

IP130(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) IP130 TO IP142 DRILLED AS PART OF THE 2018 GHD INVESTIGATIONS.

TP120(m) TEST PITS LOCATION, NUMBER AND DEPTH OF FILL (M) TP120 TO TP121 EXCAVATED AS PART OF THE 2018 GHD INVESTIGATIONS.

BH1(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) BH1 TO BH14 DRILLED AS PART OF THE NOVEMBER 2017 EIS INVESTIGATION.



0 12.5 25 37.5 50 62.5

SCALE 1:1250 @A3 m

This plan should be read in conjunction with the Environmental report.

Title: **SAMPLE LOCATION PLAN**

Location: GRIFFITH REGIONAL HEALTH SERVICE, 1 NOOREBAR AVE GRIFFITH, NSW

Report No: E30991BT

Figure: 2

JKEnvironments

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LEGEND

APPROXIMATE SITE BOUNDARY

WIDER HOSPITAL PROPERTY BOUNDARY

BH201(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) BH201 TO BH217 WERE DRILLED AS PART OF THE CURRENT JKE INVESTIGATION.

BH101(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) BH100 TO BH116 DRILLED AS PART OF THE 2018 GHD INVESTIGATIONS.

BH116(m) GROUNDWATER MONITORING WELL LOCATIONS, NUMBER AND DEPTH OF FILL (M) BH116 TO DRILLED AS PART OF THE 2018 GHD INVESTIGATIONS.

IP130(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) IP130 TO IP142 DRILLED AS PART OF THE 2018 GHD INVESTIGATIONS.

TP120(m) TEST PITS LOCATION, NUMBER AND DEPTH OF FILL (M) TP120 TO TP121 EXCAVATED AS PART OF THE 2018 GHD INVESTIGATIONS.

BH1(m) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (M) BH1 TO BH14 DRILLED AS PART OF THE NOVEMBER 2017 EIS INVESTIGATION.

Location	Depth (metres)
Analyte	Concentration (units)

SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK

SOIL CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK

GROUNDWATER CONTAMINATION ABOVE SAC

BH116	
Cadmium	0.0005mg/L
Copper	0.017mg/L
Nickel	0.019mg/L
Zinc	0.027mg/L

TP124	0.0-0.1
Asbestos	0.0436%

BH107	0.05-0.2m
Nickel	390mg/kg

APPROXIMATE AREA OF USTs.

MAINTENANCE SHED

GARDENERS SHED

BOILER HOUSE AND VEHICLE REPAIR SHOP

ANIMOO AVENUE

WARRAMBOOL STREET

NOOREBAR AVENUE

BH101(0.15) BH211(0.0) BH210(0.0) BH114(0.2) BH13(0.0) BH100(0.25) BH209(0.2) BH104(0.4) BH116(0.3) TP125(0.1) BH212(0.2) BH115(0.2) TP124(0.1) BH213(0.2) BH113(0.2) BH105(0.2) TP123(0.1) BH112(0.2) BH103(0.2) BH214(0.3) BH106(0.2) BH217(0.3) BH108(0.2) TP122(0.1) BH111(0.2) BH107(0.4) BH11(0.0) BH12(0.0) TP121(1.1) BH110(0.2) BH109(0.25) IP142(0.2) BH10(0.0) BH9(0.2) IP143(0.6) IP130(0.2) IP131(0.4) BH207(0.1) IP133(0.6) IP134(0.5) BH208(0.3) BH205(0.2) BH206(0.9) 136 IP135 IP132(0.2) BH204(0.2) IP137(0.2) IP138(0.2) BH14(0.25) BH203(0.2) IP140(0.2) IP139(0.2) BH215(0.5) BH102 IP141(0.4) BH216(0.6) BH202(0.7) BH201(0.4) BH5(0.5) BH4(0.0) TP120(0.2) BH3(0.0) BH6(0.2) BH2(0.45) BH7(0.0) BH8(0.0) BH1(0.1)

0 12.5 25 37.5 50 62.5

SCALE 1:1250 @A3 m

This plan should be read in conjunction with the Environmental report.

Title: **CONTAMINATION LOCATION PLAN**

Location: GRIFFITH REGIONAL HEALTH SERVICE, 1 NOOREBAR AVE GRIFFITH, NSW

Report No: E30991BT

Figure: 3

JKEnvironments

PLOT DATE: 25/11/2019 12:03:39 PM DWG FILE: S:\S EIS\SC EIS JOBS\3000'S\E30991KH GRIFFITH\CAD\CAD\30991L2\E30998T.DWG

Appendix B: Laboratory Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration	**PCBs:**	Polychlorinated Biphenyls
ACM:	Asbestos Containing Material	**PCE:**	Perchloroethylene (Tetrachloroethylene or Teterachloroethene)
ADWG:	AustralianDrinking Water Guidelines	**pH_{KCL} :**	pH of filtered 1:20, 1M KCL extract, shaken overnight
AF:	Asbestos Fines	**pH_{ox} :**	pH of filtered 1:20 1M KCl after peroxide digestion
ANZG	Australian and New Zealand Guidelines	**PQL:**	Practical Quantitation Limit
B(a)P:	Benzo(a)pyrene	**RS:**	Rinsate Sample
CEC:	Cation Exchange Capacity	**RSL:**	Regional Screening Levels
CRC:	Cooperative Research Centre	**SAC:**	Site Assessment Criteria
CT:	Contaminant Threshold	**SCC:**	Specific Contaminant Concentration
EILs:	Ecological Investigation Levels	**S_{Cr}:**	Chromium reducible sulfur
ESLs:	Ecological Screening Levels	**S_{POS}:**	Peroxide oxidisable Sulfur
FA:	Fibrous Asbestos	**SSA:**	Site Specific Assessment
GIL:	Groundwater Investigation Levels	**SSHSLs:**	Site Specific Health Screening Levels
HILs:	Health Investigation Levels	**TAA:**	Total Actual Acidity in 1M KCL extract titrated to pH6.5
HSLs:	Health Screening Levels	**TB:**	Trip Blank
HSL-SSA:	Health Screening Level-SiteSpecific Assessment	**TCA:**	1,1,1 Trichloroethane (methyl chloroform)
NA:	Not Analysed	**TCE:**	Trichloroethylene (Trichloroethene)
NC:	Not Calculated	**TCLP:**	Toxicity Characteristics Leaching Procedure
NEPM:	National Environmental Protection Measure	**TPA:**	Total Potential Acidity, 1M KCL peroxide digest
NHMRC:	National Health and Medical Research Council	**TS:**	Trip Spike
NL:	Not Limiting	**TRH:**	Total Recoverable Hydrocarbons
NSL:	No Set Limit	**TSA:**	Total Sulfide Acidity (TPA-TAA)
OCP:	Organochlorine Pesticides	**UCL:**	Upper Level Confidence Limit on Mean Value
OPP:	Organophosphorus Pesticides	**USEPA**	United States Environmental Protection Agen
PAHs:	Polycyclic Aromatic Hydrocarbons	**VOCC:**	Volatile Organic Chlorinated Compounds
ppm:	Parts per million	**WHO:**	World Health Organisation

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also refered to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

TABLE A
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH201	0.1-0.2	Fill: silty clay	<4	<0.4	17	6	6	<0.1	7	21	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH201	0.1-0.2	Laboratory duplicate	<4	<0.4	17	6	7	<0.1	6	23	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH202	0.1-0.2	Silty clay	<4	<0.4	20	6	9	<0.1	7	12	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH203	0.1-0.2	Fill: silty clay	<4	<0.4	15	10	11	<0.1	10	18	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH204	0.1-0.2	Fill: silty clay	5	<0.4	25	33	21	<0.1	8	42	0.68	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH205	0.1-0.2	Fill: silty gravel	<4	<0.4	16	4	5	<0.1	6	8	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH206	0.1-0.2	Fill: silty clay	<4	<0.4	25	8	8	<0.1	11	16	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH207	0.05-0.1	Fill: silty gravel	<4	<0.4	41	27	14	<0.1	70	48	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH208	0.1-0.2	Fill: silty gravel	<4	<0.4	68	38	6	<0.1	170	43	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH209	0.1-0.2	Fill: clayey silt	<4	<0.4	44	11	9	<0.1	32	25	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH210	0.05-0.1	Clayey silt	<4	<0.4	17	3	5	<0.1	4	71	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH211	0.1-0.2	Clayey silt	<4	<0.4	17	3	4	<0.1	3	7	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH211	0.1-0.2	Laboratory duplicate	<4	<0.4	17	3	4	<0.1	3	6	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH212	0.1-0.2	Fill: silty clay	<4	<0.4	20	7	8	<0.1	11	20	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH213	0.1-0.2	Fill: silty gravel	<4	<0.4	43	17	60	<0.1	44	79	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH214	0.1-0.2	Fill: silty clay	<4	<0.4	30	18	14	<0.1	43	31	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH215	0.1-0.2	Fill: silty clay	<4	<0.4	17	7	5	<0.1	19	12	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH216	0.1-0.3	Fill: silty clay	<4	<0.4	62	28	44	<0.1	110	43	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH217	0.1-0.3	Fill: silty clay	<4	<0.4	16	7	7	<0.1	8	30	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
Total Number of Samples			19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17
Maximum Value			5	<PQL	68	38	60	<PQL	170	79	0.68	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	NC

Concentration above the SAC **VALUE**

TABLE B
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					**HSL-A/B:LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH201	0.1-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH201	0.1-0.2	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH202	0.1-0.2	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH203	0.1-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH204	0.1-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH205	0.1-0.2	Fill: silty gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH206	0.1-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH207	0.05-0.1	Fill: silty gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH208	0.1-0.2	Fill: silty gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH209	0.1-0.2	Fill: clayey silt	0m to <1m	Sand	<25	89	<0.2	<0.5	<1	<3	<1	0
BH210	0.05-0.1	Clayey silt	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH211	0.1-0.2	Clayey silt	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH211	0.1-0.2	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH212	0.1-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH213	0.1-0.2	Fill: silty gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH214	0.1-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH215	0.1-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH216	0.1-0.3	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH217	0.1-0.3	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples					19	19	19	19	19	19	19	19
Maximum Value					<PQL	89	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**

The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

SITE ASSESSMENT CRITERIA

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1
NEPM 2013 HSL Land Use Category					**HSL-A/B:LOW/HIGH DENSITY RESIDENTIAL**						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
BH201	0.1-0.2	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH201	0.1-0.2	Laboratory duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH202	0.1-0.2	Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH203	0.1-0.2	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH204	0.1-0.2	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH205	0.1-0.2	Fill: silty gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH206	0.1-0.2	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH207	0.05-0.1	Fill: silty gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH208	0.1-0.2	Fill: silty gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH209	0.1-0.2	Fill: clayey silt	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH210	0.05-0.1	Clayey silt	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH211	0.1-0.2	Clayey silt	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH211	0.1-0.2	Laboratory duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH212	0.1-0.2	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH213	0.1-0.2	Fill: silty gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH214	0.1-0.2	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH215	0.1-0.2	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH216	0.1-0.3	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH217	0.1-0.3	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3

JKEnvironments

TABLE C
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																	
							AGED HEAVY METALS-EILs						EILs		ESLs						
				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH201	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	<4	17	6	6	7	21	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH201	0.1-0.2	Laboratory duplicate	Coarse	NA	NA	NA	<4	17	6	7	6	23	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH202	0.1-0.2	Silty clay	Fine	NA	NA	NA	<4	20	6	9	7	12	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH203	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	<4	15	10	11	10	18	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH204	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	5	25	33	21	8	42	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.08
BH205	0.1-0.2	Fill: silty gravel	Coarse	NA	NA	NA	<4	16	4	5	6	8	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH206	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	<4	25	8	8	11	16	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH207	0.05-0.1	Fill: silty gravel	Coarse	NA	18	NA	<4	41	27	14	70	48	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH208	0.1-0.2	Fill: silty gravel	Coarse	NA	37	NA	<4	68	38	6	170	43	<1	<0.1	<25	<50	<100	120	<0.2	<0.5	<1	<3	<0.05
BH209	0.1-0.2	Fill: clayey silt	Fine	NA	NA	NA	<4	44	11	9	32	25	<1	<0.1	<25	89	170	<100	<0.2	<0.5	<1	<3	<0.05
BH210	0.05-0.1	Clayey silt	Fine	NA	NA	NA	<4	17	3	5	4	71	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH211	0.1-0.2	Clayey silt	Fine	NA	NA	NA	<4	17	3	4	3	7	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH211	0.1-0.2	Laboratory duplicate	Coarse	NA	NA	NA	<4	17	3	4	3	6	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH212	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	<4	20	7	8	11	20	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH213	0.1-0.2	Fill: silty gravel	Coarse	NA	10	NA	<4	43	17	60	44	79	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH214	0.1-0.2	Fill: silty clay	Fine	NA	33	NA	<4	30	18	14	43	31	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH215	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	<4	17	7	5	19	12	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH216	0.1-0.3	Fill: silty clay	Fine	NA	21	NA	<4	62	28	44	110	43	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH217	0.1-0.3	Fill: silty clay	Fine	NA	NA	NA	<4	16	7	7	8	30	<1	<0.1	<25	<50	100	<100	<0.2	<0.5	<1	<3	<0.05
Total Number of Samples							19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Maximum Value							5	68	38	60	170	79	<PQL	<PQL	<PQL	89	170	120	<PQL	<PQL	<PQL	<PQL	0.08

Concentration above the SAC

The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

EIL AND ESL ASSESSMENT CRITERIA

				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs								
							Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH201	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH201	0.1-0.2	Laboratory duplicate	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	20
BH202	0.1-0.2	Silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH203	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH204	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH205	0.1-0.2	Fill: silty gravel	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	20
BH206	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH207	0.05-0.1	Fill: silty gravel	Coarse	NA	18	NA	100	203	88	1263	275	192	170	180	180	120	300	2800	50	85	70	105	20
BH208	0.1-0.2	Fill: silty gravel	Coarse	NA	37	NA	100	203	88	1263	425	192	170	180	180	120	300	2800	50	85	70	105	20
BH209	0.1-0.2	Fill: clayey silt	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH210	0.05-0.1	Clayey silt	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH211	0.1-0.2	Clayey silt	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH211	0.1-0.2	Laboratory duplicate	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	20
BH212	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH213	0.1-0.2	Fill: silty gravel	Coarse	NA	10	NA	100	203	88	1263	175	192	170	180	180	120	300	2800	50	85	70	105	20
BH214	0.1-0.2	Fill: silty clay	Fine	NA	33	NA	100	203	88	1263	425	192	170	180	180	120	1300	5600	65	105	125	45	20
BH215	0.1-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20
BH216	0.1-0.3	Fill: silty clay	Fine	NA	21	NA	100	203	88	1263	355	192	170	180	180	120	1300	5600	65	105	125	45	20
BH217	0.1-0.3	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	65	105	125	45	20

JKEnvironments

TABLE D
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful	Total Scheduled		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	<50	<50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	<50	<50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	<50	<50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	<50	<50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH201	0.1-0.2	Fill: silty clay	<4	<0.4	17	6	6	<0.1	7	21	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH201	0.1-0.2	Laboratory duplicate	<4	<0.4	17	6	7	<0.1	6	23	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH202	0.1-0.2	Silty clay	<4	<0.4	20	6	9	<0.1	7	12	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH203	0.1-0.2	Fill: silty clay	<4	<0.4	15	10	11	<0.1	10	18	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH204	0.1-0.2	Fill: silty clay	5	<0.4	25	33	21	<0.1	8	42	0.68	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH205	0.1-0.2	Fill: silty gravel	<4	<0.4	16	4	5	<0.1	6	8	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH206	0.1-0.2	Fill: silty clay	<4	<0.4	25	8	8	<0.1	11	16	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH207	0.05-0.1	Fill: silty gravel	<4	<0.4	41	27	14	<0.1	**70**	48	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH208	0.1-0.2	Fill: silty gravel	<4	<0.4	68	38	6	<0.1	**170**	43	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH209	0.1-0.2	Fill: clayey silt	<4	<0.4	44	11	9	<0.1	32	25	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	62	150	<100	212	<0.2	<0.5	<1	<3	Not Detected
BH210	0.05-0.1	Clayey silt	<4	<0.4	17	3	5	<0.1	4	71	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH211	0.1-0.2	Clayey silt	<4	<0.4	17	3	4	<0.1	3	7	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH211	0.1-0.2	Laboratory duplicate	<4	<0.4	17	3	4	<0.1	3	6	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH212	0.1-0.2	Fill: silty clay	<4	<0.4	20	7	8	<0.1	11	20	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH213	0.1-0.2	Fill: silty gravel	<4	<0.4	43	17	60	<0.1	**44**	79	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH214	0.1-0.2	Fill: silty clay	<4	<0.4	30	18	14	<0.1	**43**	31	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH215	0.1-0.2	Fill: silty clay	<4	<0.4	17	7	5	<0.1	19	12	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH216	0.1-0.3	Fill: silty clay	<4	<0.4	62	28	44	<0.1	**110**	43	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH217	0.1-0.3	Fill: silty clay	<4	<0.4	16	7	7	<0.1	8	30	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
Total Number of samples			19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17
Maximum Value			5	<PQL	68	38	60	<PQL	170	79	0.68	0.08	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	62	150	<PQL	212	<PQL	<PQL	<PQL	<PQL	NC

Concentration above the CT1 — **VALUE**
Concentration above SCC1 — **VALUE**
Concentration above the SCC2 — **VALUE**

TABLE E
SOIL LABORATORY TCLP RESULTS
All data in mg/L unless stated otherwise

			Nickel
PQL - Envirolab Services			0.02
TCLP1 - General Solid Waste			2
TCLP2 - Restricted Solid Waste			8
TCLP3 - Hazardous Waste			>8
Sample Reference	**Sample Depth**	**Sample Description**	
BH207	0.05-0.1	Fill: silty gravel	<0.02
BH208	0.1-0.2	Fill: silty gravel	0.02
BH213	0.1-0.2	Fill: silty gravel	<0.02
BH214	0.1-0.2	Fill: silty clay	<0.02
BH216	0.1-0.3	Fill: silty clay	<0.02
Total Number of samples			5
Maximum Value			0.02

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**

TABLE F
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH201	0.1-0.2	Coarse	<25	<50	<100	<100
BH201	0.1-0.2	Coarse	<25	<50	<100	<100
BH202	0.1-0.2	Coarse	<25	<50	<100	<100
BH203	0.1-0.2	Coarse	<25	<50	<100	<100
BH204	0.1-0.2	Coarse	<25	<50	<100	<100
BH205	0.1-0.2	Coarse	<25	<50	<100	<100
BH206	0.1-0.2	Coarse	<25	<50	<100	<100
BH207	0.05-0.1	Coarse	<25	<50	<100	<100
BH208	0.1-0.2	Coarse	<25	<50	<100	120
BH209	0.1-0.2	Coarse	<25	89	170	<100
BH210	0.05-0.1	Coarse	<25	<50	<100	<100
BH211	0.1-0.2	Coarse	<25	<50	<100	<100
BH211	0.1-0.2	Coarse	<25	<50	<100	<100
BH212	0.1-0.2	Coarse	<25	<50	<100	<100
BH213	0.1-0.2	Coarse	<25	<50	<100	<100
BH214	0.1-0.2	Coarse	<25	<50	<100	<100
BH215	0.1-0.2	Coarse	<25	<50	<100	<100
BH216	0.1-0.3	Coarse	<25	<50	<100	<100
BH217	0.1-0.3	Coarse	<25	<50	100	<100
Total Number of Samples			19	19	19	19
Maximum Value			<PQL	89	170	120

Concentration above the SAC **VALUE**

MANAGEMENT LIMIT ASSESSMENT CRITERIA

			C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH201	0.1-0.2	Coarse	700	1000	2500	10000
BH201	0.1-0.2	Coarse	700	1000	2500	10000
BH202	0.1-0.2	Coarse	700	1000	2500	10000
BH203	0.1-0.2	Coarse	700	1000	2500	10000
BH204	0.1-0.2	Coarse	700	1000	2500	10000
BH205	0.1-0.2	Coarse	700	1000	2500	10000
BH206	0.1-0.2	Coarse	700	1000	2500	10000
BH207	0.05-0.1	Coarse	700	1000	2500	10000
BH208	0.1-0.2	Coarse	700	1000	2500	10000
BH209	0.1-0.2	Coarse	700	1000	2500	10000
BH210	0.05-0.1	Coarse	700	1000	2500	10000
BH211	0.1-0.2	Coarse	700	1000	2500	10000
BH211	0.1-0.2	Coarse	700	1000	2500	10000
BH212	0.1-0.2	Coarse	700	1000	2500	10000
BH213	0.1-0.2	Coarse	700	1000	2500	10000
BH214	0.1-0.2	Coarse	700	1000	2500	10000
BH215	0.1-0.2	Coarse	700	1000	2500	10000
BH216	0.1-0.3	Coarse	700	1000	2500	10000
BH217	0.1-0.3	Coarse	700	1000	2500	10000

TABLE G
SOIL LABORATORY RESULTS COMPARED T0 DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte		C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		82,000	62,000	85,000	120,000	1,100	120,000	85,000	130,000	29,000	
Site Use		**Intrusive Maintenance Worker - DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH201	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH201	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH202	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH203	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH204	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH205	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH206	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH207	0.05-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH208	0.1-0.2	<25	<50	<100	120	<0.2	<0.5	<1	<3	<1	0
BH209	0.1-0.2	<25	89	170	<100	<0.2	<0.5	<1	<3	<1	0
BH210	0.05-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH211	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH211	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH212	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH213	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH214	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH215	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH216	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH217	0.1-0.3	<25	<50	100	<100	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples		19	19	19	19	19	19	19	19	19	19
Maximum Value		<PQL	89	170	120	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**

TABLE H
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH206 (0.1-0.2)	Arsenic	4	<4	<4	NC	NC
Dup Ref = DUP1	Cadmium	0.4	<0.4	<0.4	NC	NC
	Chromium	1	25	17	21.0	38
Envirolab Report: 228853	Copper	1	8	6	7.0	29
	Lead	1	8	6	7.0	29
	Mercury	0.1	<0.1	<0.1	NC	NC
	Nickel	1	11	10	10.5	10
	Zinc	1	16	9	12.5	56
	Naphthalene	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	<0.1	<0.1	NC	NC
	Acenaphthene	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	<0.1	<0.1	NC	NC
	Anthracene	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	<0.1	<0.1	NC	NC
	Pyrene	0.1	<0.1	<0.1	NC	NC
	Benzo(a)anthracene	0.1	<0.1	<0.1	NC	NC
	Chrysene	0.1	<0.1	<0.1	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	<0.2	<0.2	NC	NC
	Benzo(a)pyrene	0.05	<0.05	<0.05	NC	NC
	Indeno(123-cd)pyrene	0.1	<0.1	<0.1	NC	NC
	Dibenzo(ah)anthracene	0.1	<0.1	<0.1	NC	NC
	Benzo(ghi)perylene	0.1	<0.1	<0.1	NC	NC
	TRH C6-C10 (F1)	25	<25	<25	NC	NC
	TRH >C10-C16 (F2)	50	<50	<50	NC	NC
	TRH >C16-C34 (F3)	100	<100	<100	NC	NC
	TRH >C34-C40 (F4)	100	<100	<100	NC	NC
	Benzene	0.2	<0.2	<0.2	NC	NC
	Toluene	0.5	<0.5	<0.5	NC	NC
	Ethylbenzene	1	<1	<1	NC	NC
	m+p-xylene	2	<2	<2	NC	NC
	o-xylene	1	<1	<1	NC	NC

RPD Results Above the Acceptance Criteria VALUE

TABLE I

SOIL INTER-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS

All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	Envirolab VIC PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH213 (0.1-0.2)	Arsenic	4	4	<4	<4	NC	NC
Dup Ref = DUP2	Cadmium	0.4	0.4	<0.4	<0.4	NC	NC
	Chromium	1	1	43	27	35.0	46
Envirolab Report: 228853	Copper	1	1	17	42	29.5	85
Envirolab VIC Report: 18650	Lead	1	1	60	82	71.0	31
	Mercury	0.1	0.1	<0.1	<0.1	NC	NC
	Nickel	1	1	44	21	32.5	71
	Zinc	1	1	79	220	149.5	94
	Naphthalene	0.1	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	0.1	<0.1	<0.1	NC	NC
	Acenaphthene	0.1	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	0.1	<0.1	<0.1	NC	NC
	Anthracene	0.1	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	0.1	<0.1	<0.1	NC	NC
	Pyrene	0.1	0.1	<0.1	<0.1	NC	NC
	Benzo(a)anthracene	0.1	0.1	<0.1	<0.1	NC	NC
	Chrysene	0.1	0.1	<0.1	<0.1	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	0.2	<0.2	<0.2	NC	NC
	Benzo(a)pyrene	0.05	0.05	<0.05	<0.05	NC	NC
	Indeno(123-cd)pyrene	0.1	0.1	<0.1	<0.1	NC	NC
	Dibenzo(ah)anthracene	0.1	0.1	<0.1	<0.1	NC	NC
	Benzo(ghi)perylene	0.1	0.1	<0.1	<0.1	NC	NC
	TRH C6-C10 (F1)	25	25	<25	<25	NC	NC
	TRH >C10-C16 (F2)	50	50	<50	<50	NC	NC
	TRH >C16-C34 (F3)	100	100	<100	<100	NC	NC
	TRH >C34-C40 (F4)	100	100	<100	<100	NC	NC
	Benzene	0.2	0.2	<0.2	<0.2	NC	NC
	Toluene	0.5	0.5	<0.5	<0.5	NC	NC
	Ethylbenzene	1	1	<1	<1	NC	NC
	m+p-xylene	2	2	<2	<2	NC	NC
	o-xylene	1	1	<1	<1	NC	NC

RPD Results Above the Acceptance Criteria VALUE

TABLE J
SUMMARY OF FIELD QA/QC RESULTS

ANALYSIS	Envirolab PQL		TB1[S]
			17-Oct-19
	mg/kg	µg/L	mg/kg
TRH C6-C10 (F1)	10	10	NA
Benzene	0.2	0.2	<0.2
Toluene	0.5	0.5	<0.5
Ethylbenzene	1	1	<1
m+p-xylene	2	2	<2
o-xylene	1	1	<1

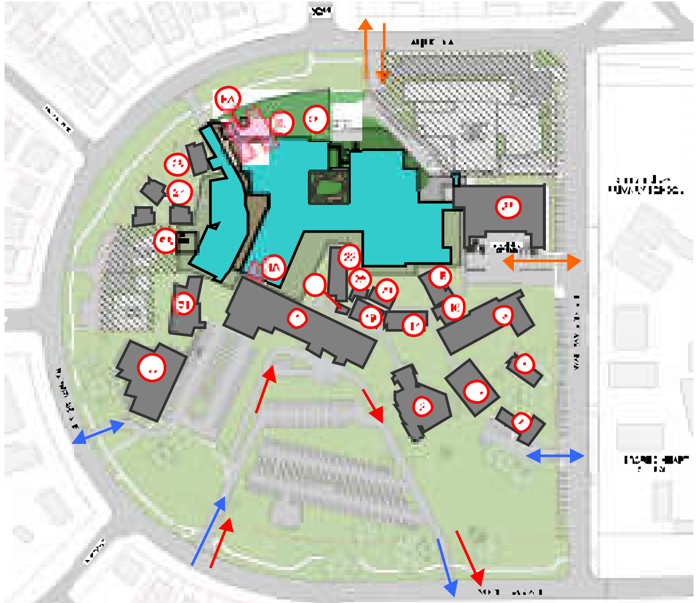
Explanation:

[S] Sample type (sand)

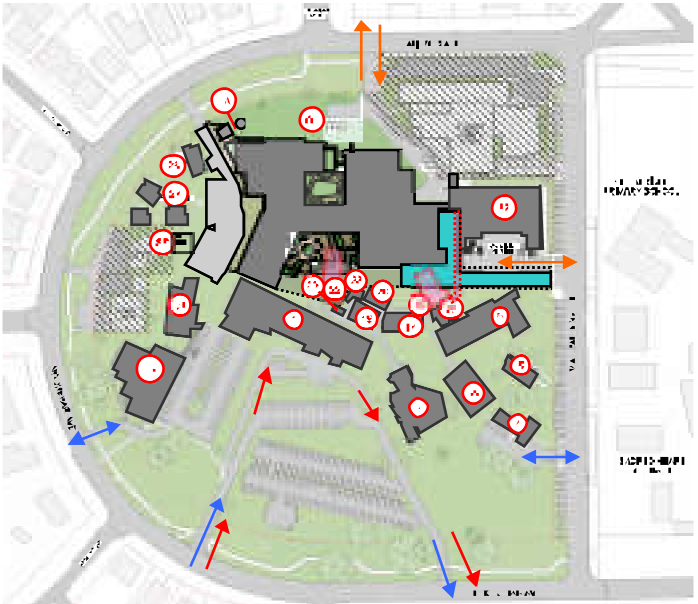
Values above PQLs/Acceptance criteria **VALUE**

Appendix C: Development Plans & Previous Assessment Information

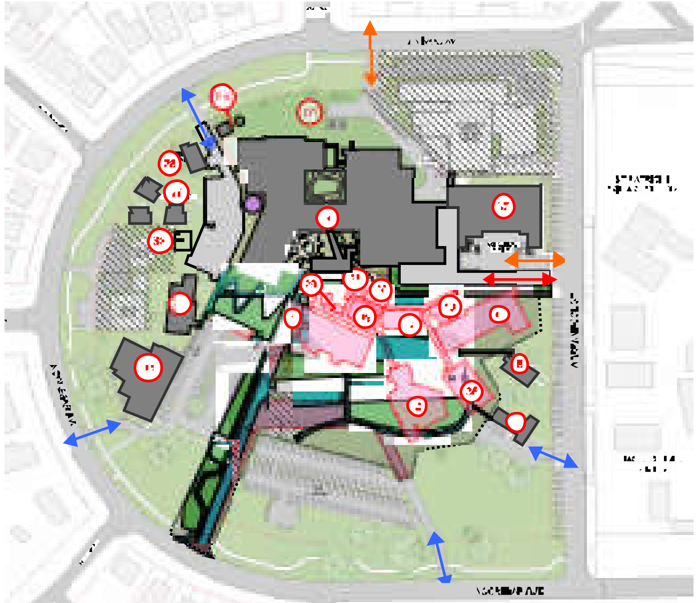
Proposed Staging Steps (for Development)



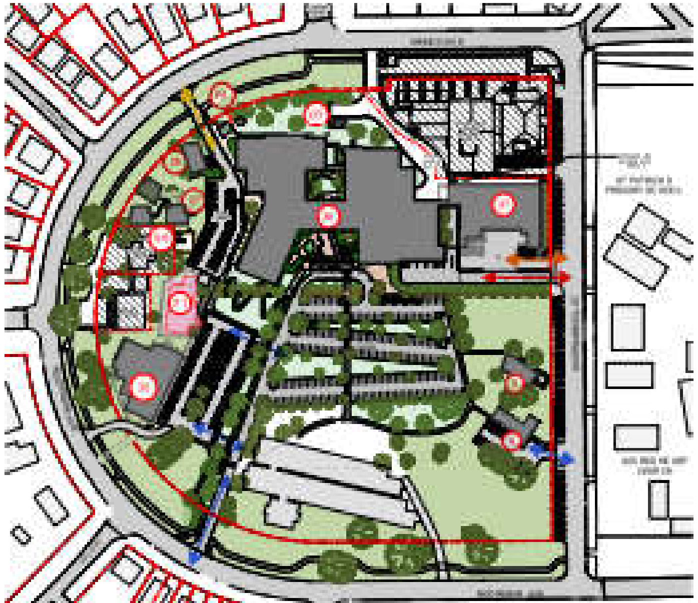
STAGE A
Demolition of Building 27 & relocation of mechanical plant within Main Works Boundary. Installation of new site infrastructure (substation / generator / fire system). Construction of new Clinical Services Building, linkages to NCB & SVPCU & western carpark, northern landscape works.



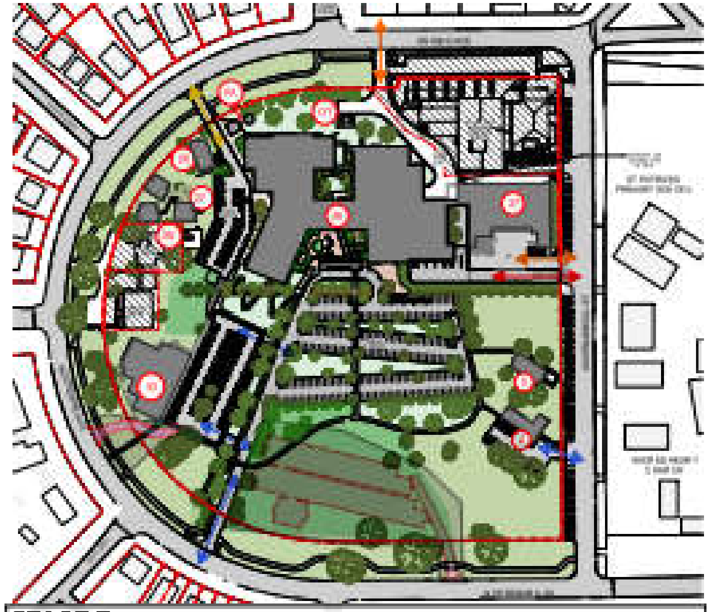
STAGE B
Demolition of buildings 16 & 22 and construction of southern courtyard and ambulance entry.



STAGE C
Demolition of existing CSB & adjoining structures. Demolition of existing carparks. Modification of driveway to Noorebar Ave. Construction of new public car park & landscape works.



STAGE D
Removal of interim Renal Unit (building 31).



STAGE E
Removal of temporary car park. Complete landscape works.

LEGEND

- 1 MEDICAL SERVICES BLOCK
- 1A PLANT ENCLOSURES
- 2 INPATIENTS UNIT
- 4 NURSES EDUCATION
- 5 DENTISTRY
- 6 MATERNITY & BIRTHING
- 15 STAFF
- 16 DOCTORS ROOMS
- 17 SPECIALIST CLINICS
- 19 BIOMEDICAL ENGINEERING
- 20 DIETETICS
- 22 IMAGING
- 25 TRACS
- 26 RELATIVES OVERNIGHT STAY
- 27 STAFF ACCOMMODATION
- 28 CAPAC
- 29 KIOSK
- 31 RENAL UNIT
- 32 AMBULATORY CARE HUB
- 35 TEMPORARY PAEDIATRIC UNIT
- 36 CLINICAL SERVICES BUILDING
- 37 NON-CLINICAL SUPPORT BUILDING
- A SPRINKLER BOOSTER ASSEMBLY & WATER TANK
- C OXYGEN TANKS
- 39 KIOSK SUBSTATION

SITE BOUNDARY

WORKS ZONE

DEMOLISHED BUILDINGS & STRUCTURES

CONSTRUCTION PROPOSED WORKS

PRIVATE OWNERSHIP NOT PART OF SITE

TEMPORARY MAIN PUBLIC ENTRY

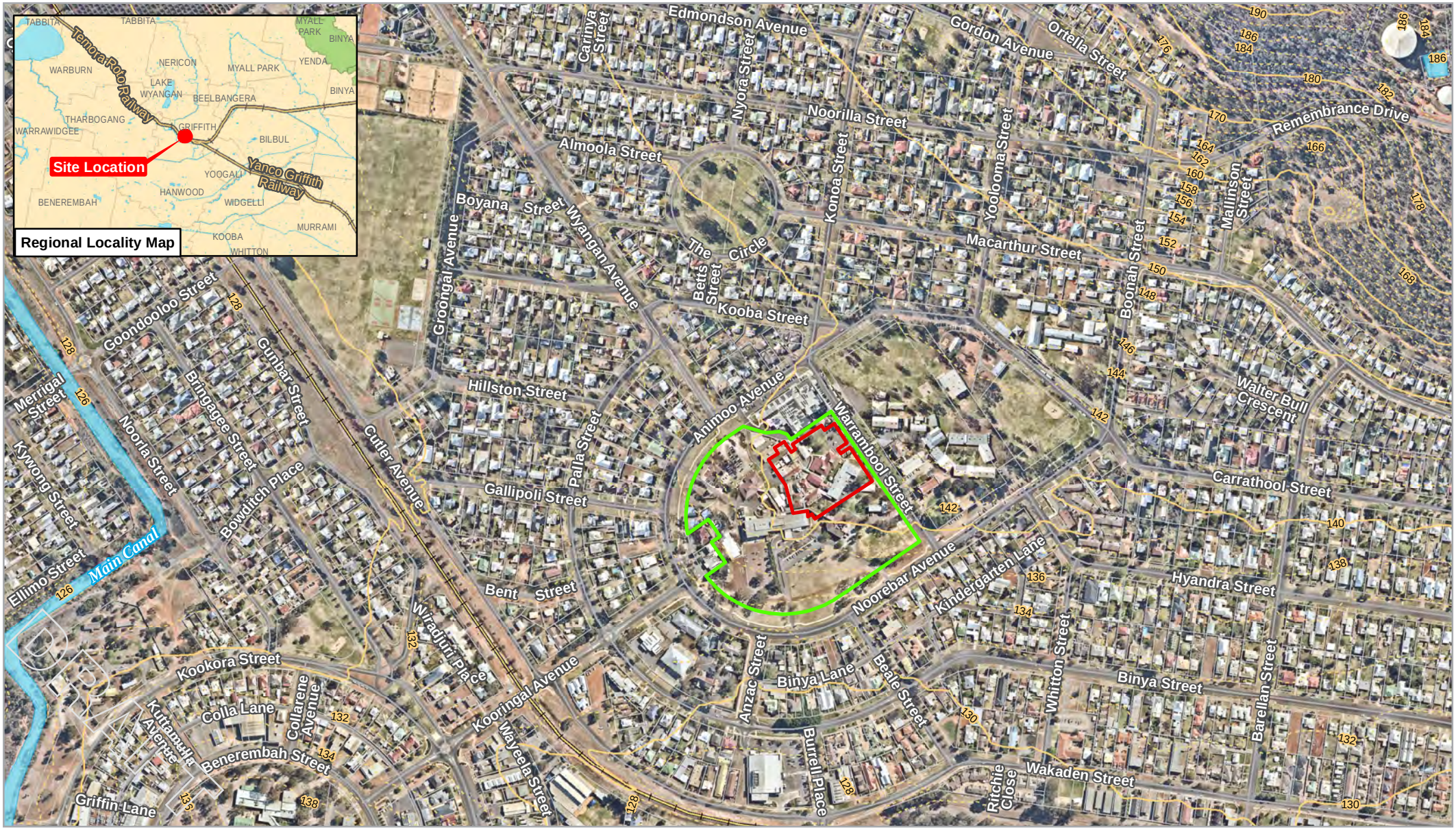
PUBLIC ACCESS

EMERGENCY VEHICLE ACCESS

LOGISTICS

STAFF

GHD Stage 1 Development Area Phase 2 Assessment Figures and Laboratory Results Summary Tables



Legend

- Stage 1 Development Area (Approximate)
- Stage 2 Development Area
- Waterbodies
- Cadastre
- Roads
- Railways
- Contours

Paper Size ISO A4

0 50 100 150 200

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

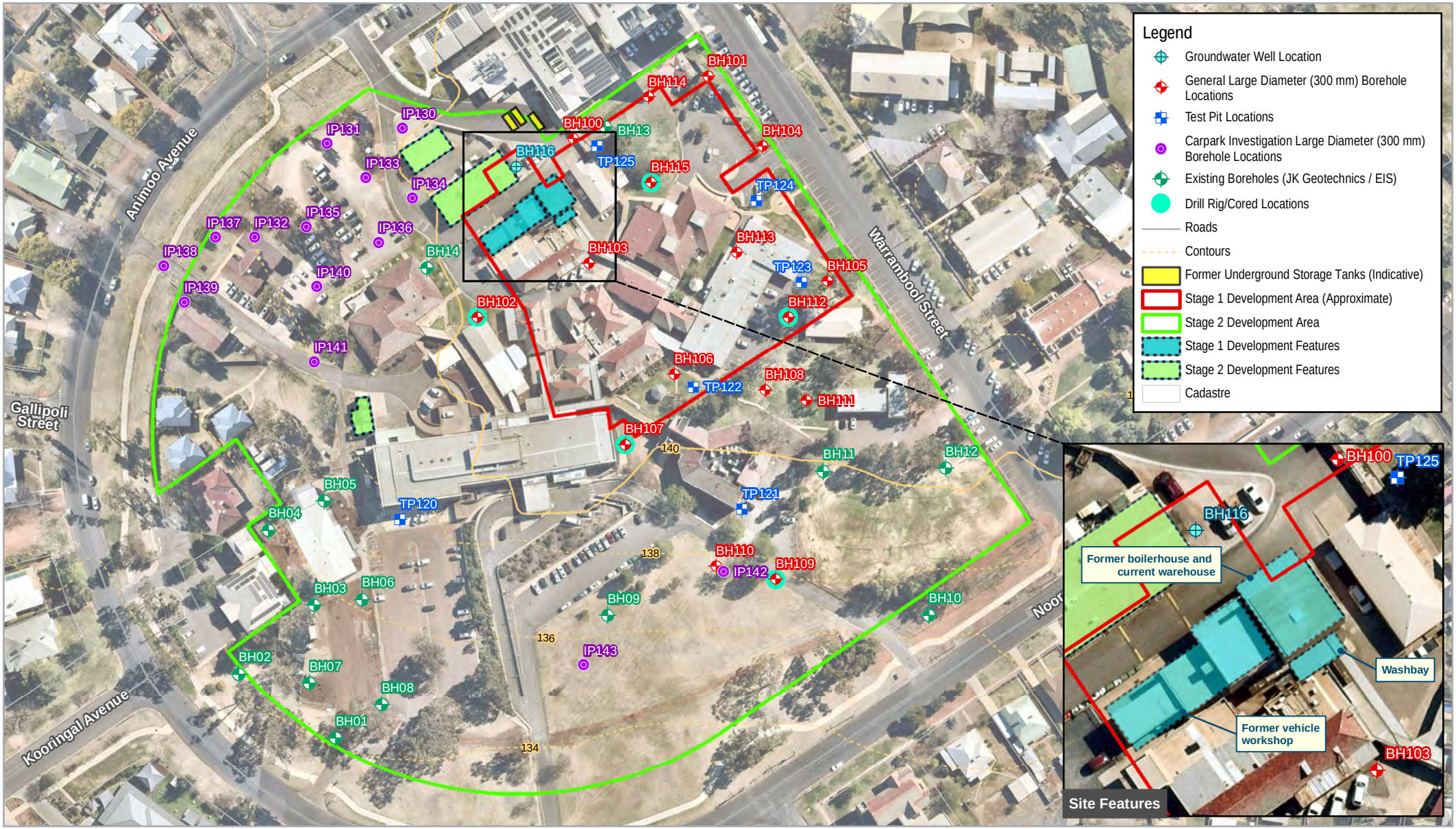
Health Infrastructure
Griffith Hospital Redevelopment
Geotechnical Investigation and Contamination Assessment

Stage 1 Development Area
Site Locality Plan

Project No. 21-27721
Revision No. A
Date 29 Nov 2018

FIGURE 1

Data source: General topo - NSW LPI DTDB 2012. Cadastre - NSW LPI DCDB 2012. Aerial imagery - Nearmap (Image date: 30 Sept 2018, Extraction date: 23 November 2018). Existing borehole locations - JK Geotechnics, 2017 (Borehole Location Plan Report No. 30991L, Fig. No. 2). Created by: kqvelasco



DRAFT

Paper Size ISO A4

0 20 40 60 80

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

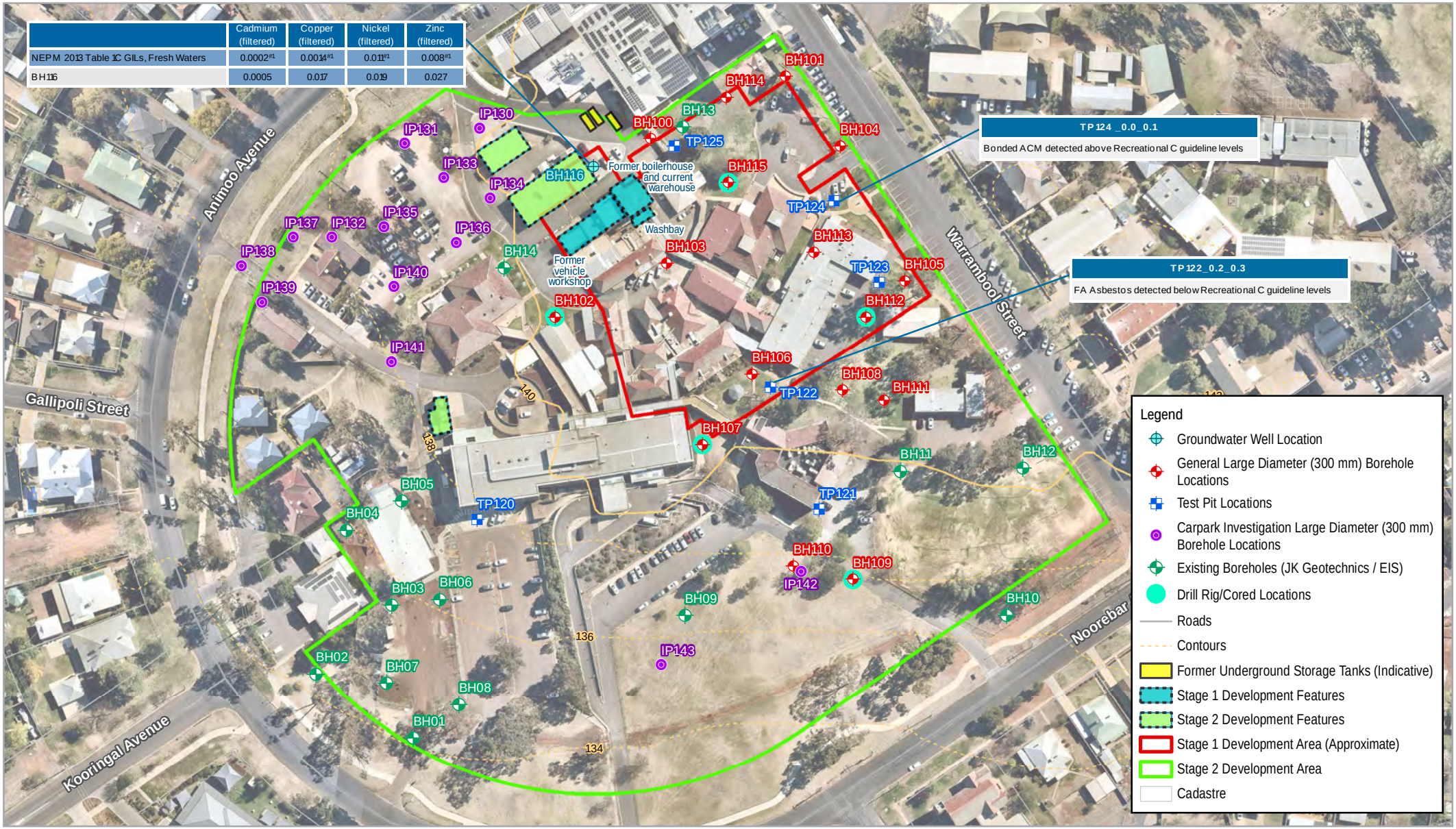
Health Infrastructure
Griffith Hospital Redevelopment
Geotechnical Investigation and Contamination Assessment

Project No. 21-27721
Revision No. A
Date 29 Nov 2018

Stage 1 Development Area Sampling Location Plan and Site Features

FIGURE 2

Data source: General topo - NSW LPI DTDB 2012. Cadastre - NSW LPI DCDB 2012. Aerial imagery - Nearmap (Image date: 30 Sept 2018, Extraction date: 23 November 2018). Existing borehole locations - JK Geotechnics, 2017 (Borehole Location Plan Report No. 30991L, Fig. No. 2). Created by: kqvelasco



DRAFT

Paper Size ISO A4

0 20 40 60 80

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

Health Infrastructure
Griffith Hospital Redevelopment
Geotechnical Investigation and Contamination Assessment

Project No. 21-27721
Revision No. A
Date 29 Nov 2018

Stage 1 Development Area Guideline Exceedance Locations

FIGURE 3

Data source: General topo - NSW LPI DTDB 2012. Cadastre - NSW LPI DCDB 2012. Aerial imagery - Nearmap (Image date: 30 Sept 2018, Extraction date: 23 November 2018). Existing borehole locations - JK Geotechnics, 2017 (Borehole Location Plan Report No. 30991L, Fig. No. 2) . Created by: kqvelasco

Appendix D Table QA1
Quality Samples

Health Infrastructure NSW
Griffith Hospital Redevelopment
– Contamination Investigation

	Groundwater QA/QC Samples			Soil QA/QC Samples							
Lab Report Number	627174	627174	627174	626759	627011	626158	626161	626158	626161	627011	627011
Field ID	RB02_GW	TB02	TS02	BH103	RB01_SOIL	TB1	TB2	TS1	TS2	TB01	TS01
Sampled_Date/Time	8/11/2018	8/11/2018	8/11/2018	2/11/2018	8/11/2018		31/10/2018		31/10/2018	8/11/2018	8/11/2018
Sample Type	Rinsate	Trip_B	Trip_S	Rinsate	Rinsate	Trip_B	Trip_B	Trip_S	Trip_S	Trip_B	Trip_S
Matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water	Soil	Soil
Method_Type	**ChemName**											
F1-BTEX	F1 (C6-C10 minus BTEX)		<20				<20	<20				
Heavy Metal	Arsenic	<0.001			<0.001	<0.001						
	Arsenic (Filtered)											
	Cadmium	<0.0002			<0.0002	<0.0002						
	Cadmium (Filtered)											
	Chromium (III+VI)	<0.001			<0.001	<0.001						
	Chromium (III+VI) (Filtered)											
	Copper	<0.001			<0.001	<0.001						
	Copper (Filtered)											
	Lead	<0.001			<0.001	<0.001						
	Lead (Filtered)											
	Mercury	<0.0001			<0.0001	<0.0001						
	Mercury (Filtered)											
	Nickel	<0.001			<0.001	<0.001						
	Nickel (Filtered)											
	Zinc	<0.005			<0.005	<0.005						
	Zinc (Filtered)											
Organic	Naphthalene (BTEXN)		<10	100*			<10	<10	78*	99*	<0.5	83*
	F1 (C6-C10 minus BTEX)										<20	
	C6-C10 Fraction		<20	77*			<20	<20	81*	72*	<20	110*
	F2 (>C10-C16 minus Naphthalene)											
	>C10-C16 Fraction											
	F3 (>C16-C34 Fraction)											
	F4 (>C34-C40 Fraction)											
	>C10-C40 (Sum of Total)											
	C6-C9 Fraction		<20	76*			<20	<20	76*	75*	<20	100*
Volatile	Benzene		<1	100*			<1	<1	110*	110*	<0.1	110*
	Toluene		<1	100*			<1	<1	94*	88*	<0.1	100*
	Ethylbenzene		<1	110*			<1	<1	94*	85*	<0.1	100*
	Xylene (o)		<1	110*			<1	<1	100*	97*	<0.1	100*
	Xylene (m & p)		<2	110*			<2	<2	98*	96*	<0.2	100*
	Xylene Total		<3	110*			<3	<3	97*	89*	<0.3	100*

* Results reported as percentage recovery.

Filter: Lab_Report_Number in('627011','627174','626734','626759','626158','626161')
\\ghdnet\ghd\AU\Sydney\Projects\21\27721\Contamination\Esdat_output\3. QA\QA2 - FieldBlankWater.xlsx

Appendix D
Table QA2
Duplicate RPD Comparison

Lab Report Number	626161	626161		626161	626161		626161	626161		627011	627011		627011	ES1833667		627011	ES1833667	
Field ID	BH108 0.7-1.0	QA3	RPD	IP133 0.4-0.6	QA2	RPD	IP136 0.4-0.6	QA1	RPD	TP124 0.0 0.1	QA01	RPD	TP124 0.0 0.1	QA02	RPD	TP122 0.0 0.1	QA04	RPD
Sampled Date/Time	1/11/2018	1/11/2018		31/10/2018	31/10/2018		31/10/2018	31/10/2018		8/11/2018	8/11/2018		8/11/2018	8/11/2018		8/11/2018	8/11/2018	

Method_Type	ChemName	Units	EQL																	
Inorganic	Moisture Content (dried @ 103°C)	%	1	8.2	7	16	3.1	2.9	7	11	12	9	13	13	0	13					
Heavy Metal	Arsenic	mg/kg	2 : 5 (Interlab)	3	2.7	11	2.6	2.7	4	3.3	3.8	14	2.5	2.7	8	2.5	<5	0	2.1	<5	0
	Cadmium	mg/kg	0.4 : 1 (Interlab)	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<1	0	<0.4	<1	0
	Chromium (III+VI)	mg/kg	5 : 2 (Interlab)	23	23	0	19	19	0	33	33	0	**27**	**37**	**31**	**27**	**19**	**35**	16	13	21
	Copper	mg/kg	5	8.7	7.8	11	7.6	7.5	1	11	12	9	11	15	31	11	9	20	7	6	15
	Lead	mg/kg	5	9.7	10	3	14	14	0	9.1	9.5	4	**14**	**75**	**137**	14	18	25	6.9	6	14
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	5 : 2 (Interlab)	13	9.6	30	8.5	8	6	22	24	9	**26**	**47**	**58**	**26**	**19**	**31**	5.7	4	35
	Zinc	mg/kg	5	20	22	10	31	27	14	21	22	5	41	52	24	41	41	0	26	21	21
Organic	Naphthalene (BTEXN)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5					
Volatile	Benzene	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.2	0	<0.1	<0.2	0
	Toluene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Ethylbenzene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Xylene (o)	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Xylene (m & p)	mg/kg	0.2 : 0.5 (Interlab)	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.5	0	<0.2	<0.5	0
	Xylene Total	mg/kg	0.3 : 0.5 (Interlab)	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.5	0	<0.3	<0.5	0
Organic	F1 (C6-C10 minus BTEX)	mg/kg	20 : 10 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<10	0	<20	<10	0
	C6-C10 Fraction	mg/kg	20 : 10 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<10	0	<20	<10	0
	F2 (>C10-C16 minus Naphthalene)	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
	>C10-C16 Fraction	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
	F3 (>C16-C34 Fraction)	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	120	110	9	120	<100	18	<100	<100	0
	F4 (>C34-C40 Fraction)	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
	>C10-C40 (Sum of Total)	mg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<100	0	<100	<100	0	120	110	9	120	<50	82	<100	<50	0
	C6-C9 Fraction	mg/kg	20 : 10 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<10	0	<20	<10	0
TPH	C10-C14 Fraction	mg/kg	20 : 50 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<50	0	<20	<50	0
	C15-C28 Fraction	mg/kg	50 : 100 (Interlab)	<50	<50	0	<50	<50	0	<50	<50	0	77	72	7	77	<100	0	<50	<100	0
	C29-C36 Fraction	mg/kg	50 : 100 (Interlab)	<50	<50	0	<50	<50	0	<50	<50	0	66	57	15	66	<100	0	<50	<100	0
	C10-C36 (Sum of Total)	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	143	129	10	143	<50	96	<50	<50	0
PAH	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a) pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo[b+j]fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Naphthalene-PAH	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5					
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	PAHs (Sum of total) - Lab calc	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	mg/kg	0.5	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0
	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0

*RPDs have only been considered where a concentration is greater than 10 times the EQL.
**GHD adopts a nominal acceptance criterion of < 50% RPD for field duplicates and splits for organics and an acceptance criterion of < 30% RPD for inorganics.
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

								Inorganics				Particle Size Analysis	Exchangeable cations	TOC	Asbestos			
								Moisture (%)	Electrical conductivity (lab)	Moisture Content (dried @ 103°C)	pH (aqueous extract)	Clay (<2 µm)	CEC	Total Organic Carbon	Organic Fibres - Comment	Respirable Fibres - Comment	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil
								%	µS/cm	%	pH Units	%	meq/100g	%	Comment	Comment	%w/w	%w/w
EQL								1	10	1	0.1	1	0.05	0.1				
NEPM 2013 Table 1A(1) HIL B Res																		
NEPM 2013 Table 1A(1) HIL C Rec																		
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																		
0-1m																		
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																	0.02	0.001[#11]
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**												
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759		-	-	3.3	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759		-	-	9.8	-	-	-	-	-	-	-	-
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759		-	-	16	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759		-	-	6.2	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759		-	-	5.7	-	-	-	-	-	-	-	-
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158		-	-	6.2	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158		-	260	15	8.3	11	29	0.4	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158		-	-	4.8	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158		-	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158		-	-	6.8	-	-	-	-	-	-	-	-
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158		-	-	7.0	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158		-	-	19	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158		-	-	6.0	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158		-	-	5.2	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.0000
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158		-	170	7.6	7.0	7.5	15	0.7	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158		-	-	11	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667		21.2	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011		-	-	17	-	-	-	-	-	-	-	-
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011		-	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.000032
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011		-	-	13	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011		-	-	13	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.0000
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011		-	-	13	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667		12.4	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011		-	-	13	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0436	0.0000
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011		-	-	4.8	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011		-	-	6.4	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.0000

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).

#2 In the absence of a guideline value for total chromium, chromium VI value adopted

#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.

#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.

#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)

#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the conc of each carc. PAH in sample by its BaP TEF (ref Table 1A(1)) & summing

#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc dioxin like PCBs) should be undertaken

#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.

#10 Not limiting: Derived soil HSL exceeds soil saturation concentration

#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.

#12 Nil

								Metals									
							Asbestos Reported Result	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene
							Comment	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL								2	0.4	2	5	5	0.1	2	5	0.1
NEPM 2013 Table 1A(1) HIL B Res								500[#1]	150	500[#2]	30,000	1,200[#3]	120[#4]	1,200	60,000	
NEPM 2013 Table 1A(1) HIL C Rec								300[#1]	90	300[#2]	17,000	600[#3]	80[#4]	1,200	30,000	
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																
0-1m																0.5
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**										
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	No asbestos detected at the reporting limit of 0.01% w/w.	<2	<0.4	18	<5	<5	<0.1	<5	11	<0.1
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	-	3.5	<0.4	25	9.1	7.5	<0.1	9.3	14	<0.1
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	No asbestos detected at the reporting limit of 0.01% w/w.	<2	<0.4	26	12	46	<0.1	27	37	<0.1
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	No asbestos detected at the reporting limit of 0.01% w/w.	5.5	<0.4	54	19	6.6	<0.1	59	31	<0.1
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	-	<2	<0.4	20	<5	<5	<0.1	9.2	8.0	<0.1
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	2.3	<0.4	22	11	13	0.1	9.0	40	<0.1
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	4.8	<0.4	35	12	12	<0.1	22	28	<0.1
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	3.1	<0.4	21	9.3	12	<0.1	7.9	32	<0.1
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	-	2.9	<0.4	19	6.5	8.9	<0.1	11	12	<0.1
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	4.9	<0.4	27	13	12	<0.1	13	51	<0.1
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	3.8	<0.4	30	13	15	<0.1	22	39	<0.1
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	4.5	<0.4	46	12	20	<0.1	38	40	<0.1
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	3.9	<0.4	19	5.8	8.1	<0.1	7.6	9.4	<0.1
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	<5	<1	13	6	6	<0.1	4	21	<0.2
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	-	2.1	<0.4	16	7.0	6.9	<0.1	5.7	26	<0.1
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	**FA Chrysotile asbestos detected in weathered fibre cement fragments below reporting limit**	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	2.4	<0.4	25	6.2	6.1	<0.1	8.5	11	<0.1
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	No asbestos detected at the reporting limit of 0.001% w/w.*	2.9	<0.4	21	15	53	<0.1	9.5	41	<0.1
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	2.7	<0.4	37	15	75	<0.1	47	52	<0.1
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	<5	<1	19	9	18	<0.1	19	41	<0.2
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	**Chrysotile asbestos detected in fibre cement fragments.**	2.5	<0.4	27	11	14	<0.1	26	41	<0.1
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	<2	<0.4	24	5.3	7.6	<0.1	15	11	<0.1
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	No asbestos detected at the reporting limit of 0.001% w/w.*	2.2	<0.4	22	17	10	<0.1	7.8	17	<0.1

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considere
#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental
#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinoge
#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessm
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

								BTEXN							TRH - NEPM 2013							TRH - NEPM 1999			
								Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction
								mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL								0.1	0.1	0.1	0.2	0.3	0.5	0.2	10	10	50	50	100	100	50	10	20	50	50
NEPM 2013 Table 1A(1) HIL B Res																									
NEPM 2013 Table 1A(1) HIL C Rec																									
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																									
0-1m								160	55			40	3		45[#8]		110[#9]								
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																									
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																			
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	28	75	<50
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667		<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	110	<100	110	<20	<20	72	57
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667		<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	120	<100	120	<20	<20	77	66
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011		<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
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#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessm
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

		PAHs																	
	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Naphthalene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HIL B Res																		
NEPM 2013 Table 1A(1) HIL C Rec																		
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																		
0-1m													3			3		
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																		
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**													
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	103	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	129	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	143	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5

Comments

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#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessm
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

																					OC Pesticides		
						PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.5	0.5	0.5	0.5	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HIL B Res						400[#5]	4[#6]	4[#6]	4[#6]						10		90				600		
NEPM 2013 Table 1A(1) HIL C Rec						300[#5]	3[#6]	3[#6]	3[#6]						10		70				400		
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																							
0-1m																							
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																							
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																	
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	-	-	-	-	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considere
#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental
#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinoge
#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessm
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

							Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Bolstar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	1	0.2	0.2	0.2	0.2	0.2	0.2	2
NEPM 2013 Table 1A(1) HIL B Res									20				10		15	500	30					340		
NEPM 2013 Table 1A(1) HIL C Rec									20				10		10	400	30					250		
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																								
0-1m																								
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																								
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																		
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
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#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considere
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#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
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#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

							OP Pesticides													
							Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							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	2	0.2
NEPM 2013 Table 1A(1) HIL B Res																								
NEPM 2013 Table 1A(1) HIL C Rec																								
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																								
0-1m																								
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																								
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																		
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<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	<2	<0.2
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<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	<2	<0.2
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<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	<2	<0.2
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<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	<2	<0.2
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<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	<2	<0.2
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<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	<2	<0.2
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<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	<2	<0.2
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	<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	<2	<0.2
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<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	<2	<0.2
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<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	<2	<0.2
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considere
#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental
#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinoge
#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessm
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

																			PCBs	
							Omethoate	Parathion	Phorate	Pirimiphos-methyl	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1A(1) HIL B Res																							1[#7]
NEPM 2013 Table 1A(1) HIL C Rec																							1[#7]
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																							
0-1m																							
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																							
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																	
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
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#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

										BTEXN								TRH - NEPM 2013							TRH - NEPM 19		
										Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction
										mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL										0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.2	10	10	50	50	100	100	50	10	20	50
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space										120	18,000	5,300			15,000	1,900		5,100		3,800		5,300	7,400				
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial										430	99,000	27,000			81,000	11,000		26,000		20,000		27,000	38,000				
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																					
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	28	75
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667				<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	110	<100	110	<20	<20	72
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667				<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	120	<100	120	<20	<20	77
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011				<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50

Comments
#1 Nil

							99		PAHs														
							C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Naphthalene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space																				1,900			1,900	
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																				11,000			11,000	
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																		
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<50	103	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	57	129	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	66	143	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5

Comments
#1 Nil

							Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space											
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial											
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**					
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	<0.5	0.6	1.2
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<0.5	<0.5	<0.5	0.6	1.2
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	<0.5	0.6	1.2
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	<0.5	0.6	1.2
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<0.5	<0.5	<0.5	0.6	1.2
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	<0.5	<0.5	<0.5	0.6	1.2
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	<0.5	<0.5	<0.5	0.6	1.2
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<0.5	<0.5	<0.5	0.6	1.2
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	<0.5	<0.5	<0.5	0.6	1.2
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	<0.5	<0.5	<0.5	0.6	1.2
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	<0.5	<0.5	<0.5	0.6	1.2
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	<0.5	<0.5	<0.5	0.6	1.2
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<0.5	<0.5	<0.5	0.6	1.2
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	<0.5	<0.5	<0.5	0.6	1.2
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	<0.5	<0.5	<0.5	0.6	1.2

Comments
#1 Nil

							Inorganics				Particle Size Analysis	Exchangeable cations				
							Moisture (%)	Electrical conductivity (lab)	Moisture Content (dried @ 103°C)	pH (aqueous extract)	Clay (<2 µm)	CEC	Organic Fibres - Comment	Respirable Fibres - Comment	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil
							%	µS/cm	%	pH Units	%	meq/100g	Comment	Comment	%w/w	%w/w
EQL							1	10	1	0.1	1	0.05				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																
NEPM 2013 EIL-Urban Residential- Public Open Space																
0-2m																
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																
0-2m																
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**										
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	-	-	3.3	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	-	-	9.8	-	-	-	-	-	-	-
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	16	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	6.2	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	-	-	5.7	-	-	-	-	-	-	-
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	-	-	6.2	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	260	15	8.3	11	29	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	-	-	4.8	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	-	-	6.8	-	-	-	-	-	-	-
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	7.0	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	-	-	19	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	6.0	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	-	-	5.2	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.0000
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	170	7.6	7.0	7.5	15	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	11	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	21.2	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	-	-	17	-	-	-	-	-	-	-
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.000032
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	13	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	13	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.0000
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	13	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	12.4	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	-	-	13	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0436	0.0000
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	4.8	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	6.4	-	-	-	Organic fibres detected.	No respirable fibres detected.	0.0000	0.0000

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

	Asbestos	Metals						
	Asbestos Reported Result / Comment	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		2	0.4	2	5	5	0.1	2
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil								
NEPM 2013 EIL-Urban Residential- Public Open Space								
0-2m		100		410	230	1,100		350
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil								
0-2m								

Location Code	Depth	Date	Field ID	Sample Type	Matrix Type	Lab Report Number								
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	No asbestos detected at the reporting limit of 0.01% w/w.	<2	<0.4	18	<5	<5	<0.1	<5
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	-	3.5	<0.4	25	9.1	7.5	<0.1	9.3
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	No asbestos detected at the reporting limit of 0.01% w/w.	<2	<0.4	26	12	46	<0.1	27
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	No asbestos detected at the reporting limit of 0.01% w/w.	5.5	<0.4	54	19	6.6	<0.1	59
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	-	<2	<0.4	20	<5	<5	<0.1	9.2
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	2.3	<0.4	22	11	13	0.1	9.0
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	4.8	<0.4	35	12	12	<0.1	22
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	3.1	<0.4	21	9.3	12	<0.1	7.9
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	-	2.9	<0.4	19	6.5	8.9	<0.1	11
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	4.9	<0.4	27	13	12	<0.1	13
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	3.8	<0.4	30	13	15	<0.1	22
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	4.5	<0.4	46	12	20	<0.1	38
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	3.9	<0.4	19	5.8	8.1	<0.1	7.6
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	<5	<1	13	6	6	<0.1	4
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	-	2.1	<0.4	16	7.0	6.9	<0.1	5.7
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	**FA Chrysotile asbestos detected in weathered fibre cement fragments below reporting limit**	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	2.4	<0.4	25	6.2	6.1	<0.1	8.5
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	No asbestos detected at the reporting limit of 0.001% w/w.*	2.9	<0.4	21	15	53	<0.1	9.5
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	2.7	<0.4	37	15	75	<0.1	47
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	<5	<1	19	9	18	<0.1	19
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	**Chrysotile asbestos detected in fibre cement fragments.**	2.5	<0.4	27	11	14	<0.1	26
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	<2	<0.4	24	5.3	7.6	<0.1	15
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	No asbestos detected at the reporting limit of 0.001% w/w.*	2.2	<0.4	22	17	10	<0.1	7.8

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

		BTEXN								TRH - NEPM 2013					
	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	5	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.2	10	10	50	50	100	100
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil											700[#1]		1,000[#1]	2,500	10,000
NEPM 2013 EIL-Urban Residential- Public Open Space															
0-2m	1000							170							
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil															
0-2m		50	85	70			105			180[#3]			120[#4]	300	2,800

Location Code	Depth	Date	Field ID	Sample Type	Matrix Type	Lab Report Number													
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	37	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	31	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	8.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	40	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	28	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	32	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	51	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	39	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	40	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	9.4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	21	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2	<10	<10	<50	<50	<100	<100
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	26	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	41	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	52	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	110	<100
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	41	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2	<10	<10	<50	<50	<100	<100
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	41	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	120	<100
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	17	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	-	<20	<20	<50	<50	<100	<100

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

									TRH - NEPM 1999																
								>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene
								mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL								50	10	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																						
NEPM 2013 EIL-Urban Residential- Public Open Space																						
0-2m																						
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																						
0-2m																		0.7				
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158		<100	<20	28	75	<50	103	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667		<50	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011		110	<20	<20	72	57	129	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667		<50	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011		120	<20	<20	77	66	143	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011		<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

							PAHs													
							Dibenz(a,h)anthracene	Fluoranthene	Naphthalene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4-DDE
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.05
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																					
NEPM 2013 EIL-Urban Residential- Public Open Space																					
0-2m									170			170									
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																					
0-2m																					
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**															
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.05
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

										OC Pesticides							
						a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																				
NEPM 2013 EIL-Urban Residential- Public Open Space																				
0-2m													180	180						
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																				
0-2m																				
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**														
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Bolstar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	0.05	1	0.2	0.2	0.2	0.2	0.2	0.2	2	0.2
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil															
NEPM 2013 EIL-Urban Residential- Public Open Space															
0-2m															
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil															
0-2m															
Location Code **Depth** **Date** **Field ID** **Sample Type** **Matrix Type** **Lab Report Number**															
BH101 0.05 - 0.2 2/11/2018 BH101 0.05-0.2M Normal soil 626759	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH101 0.8 - 1 2/11/2018 BH101 0.8-1.0M Normal soil 626759	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH103 0.05 - 0.2 2/11/2018 BH103 0.05-0.2M Normal soil 626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104 0.05 - 0.2 2/11/2018 BH104 0.05-0.2M Normal soil 626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104 0.4 - 0.5 2/11/2018 BH104 0.4-0.5M Normal soil 626759	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH105 0.05 - 0.2 30/10/2018 BH105_0.05-0.2 Normal soil 626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH105 0.9 - 1.1 30/10/2018 BH105_0.9-1.1 Normal soil 626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106 0.1 - 0.2 30/10/2018 BH106_0.1-0.2 Normal soil 626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH112 0.05 - 0.2 31/10/2018 BH112_0.05-0.2 Normal soil 626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112 0.8 - 1 31/10/2018 BH112_0.8-1.0 Normal soil 626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH113 0.05 - 0.2 2/11/2018 BH113_0.05-0.2 Normal soil 626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115 0.05 - 0.2 31/10/2018 BH115_0.05-0.2 Normal soil 626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH116 0.05 - 0.2 1/11/2018 BH116_0.05-0.2 Normal soil 626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116 0.3 - 0.5 1/11/2018 BH116_0.3-0.5 Normal soil 626158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH116 0.6 - 0.8 1/11/2018 BH116_0.6-0.8 Normal soil 626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116 0.9 - 1.1 1/11/2018 BH116_0.9-1.1 Normal soil 626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122 0 - 0.1 8/11/2018 QA04 Interlab_D soil ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122 0 - 0.1 8/11/2018 TP122_0.0_0.1 Normal soil 627011	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
TP122 0.2 - 0.3 8/11/2018 TP122_0.2_0.3 Normal soil 627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122 0.6 - 0.7 8/11/2018 TP122_0.6_0.7 Normal soil 627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123 0 - 0.1 8/11/2018 TP123_0.0_0.1 Normal soil 627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124 0 - 0.1 8/11/2018 QA01 Field_D soil 627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124 0 - 0.1 8/11/2018 QA02 Interlab_D soil ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124 0 - 0.1 8/11/2018 TP124_0.0_0.1 Normal soil 627011	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
TP124 0.6 - 0.7 8/11/2018 TP124_0.6_0.7 Normal soil 627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125 0.2 - 0.3 8/11/2018 TP125_0.2_0.3 Normal soil 627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

							OP Pesticides													
							Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							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
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																					
NEPM 2013 EIL-Urban Residential- Public Open Space																					
0-2m																					
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																					
0-2m																					
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**															
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<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
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<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
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<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
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<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
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<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
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<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
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<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
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	<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
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<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
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<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
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

																				PC
							Monocrotophos	Naled (Dibrom)	Omethoate	Parathion	Phorate	Pirimiphos-methyl	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							2	0.2	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																					
NEPM 2013 EIL-Urban Residential- Public Open Space																					
0-2m																					
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																					
0-2m																					
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**															
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

	Bs			
	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil				
NEPM 2013 EIL-Urban Residential- Public Open Space				
0-2m				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil				
0-2m				

Location Code	Depth	Date	Field ID	Sample Type	Matrix Type	Lab Report Number				
BH101	0.05 - 0.2	2/11/2018	BH101 0.05-0.2M	Normal	soil	626759	<0.1	<0.1	<0.1	<0.1
BH101	0.8 - 1	2/11/2018	BH101 0.8-1.0M	Normal	soil	626759	<0.1	<0.1	<0.1	<0.1
BH103	0.05 - 0.2	2/11/2018	BH103 0.05-0.2M	Normal	soil	626759	-	-	-	-
BH104	0.05 - 0.2	2/11/2018	BH104 0.05-0.2M	Normal	soil	626759	-	-	-	-
BH104	0.4 - 0.5	2/11/2018	BH104 0.4-0.5M	Normal	soil	626759	<0.1	<0.1	<0.1	<0.1
BH105	0.05 - 0.2	30/10/2018	BH105_0.05-0.2	Normal	soil	626158	<0.1	<0.1	<0.1	<0.1
BH105	0.9 - 1.1	30/10/2018	BH105_0.9-1.1	Normal	soil	626158	-	-	-	-
BH106	0.1 - 0.2	30/10/2018	BH106_0.1-0.2	Normal	soil	626158	<0.1	<0.1	<0.1	<0.1
BH112	0.05 - 0.2	31/10/2018	BH112_0.05-0.2	Normal	soil	626158	-	-	-	-
BH112	0.8 - 1	31/10/2018	BH112_0.8-1.0	Normal	soil	626158	<0.1	<0.1	<0.1	<0.1
BH113	0.05 - 0.2	2/11/2018	BH113_0.05-0.2	Normal	soil	626158	-	-	-	-
BH115	0.05 - 0.2	31/10/2018	BH115_0.05-0.2	Normal	soil	626158	<0.1	<0.1	<0.1	<0.1
BH116	0.05 - 0.2	1/11/2018	BH116_0.05-0.2	Normal	soil	626158	-	-	-	-
BH116	0.3 - 0.5	1/11/2018	BH116_0.3-0.5	Normal	soil	626158	<0.1	<0.1	<0.1	<0.1
BH116	0.6 - 0.8	1/11/2018	BH116_0.6-0.8	Normal	soil	626158	-	-	-	-
BH116	0.9 - 1.1	1/11/2018	BH116_0.9-1.1	Normal	soil	626158	-	-	-	-
TP122	0 - 0.1	8/11/2018	QA04	Interlab_D	soil	ES1833667	-	-	-	-
TP122	0 - 0.1	8/11/2018	TP122_0.0_0.1	Normal	soil	627011	<0.1	<0.1	<0.1	<0.1
TP122	0.2 - 0.3	8/11/2018	TP122_0.2_0.3	Normal	soil	627011	-	-	-	-
TP122	0.6 - 0.7	8/11/2018	TP122_0.6_0.7	Normal	soil	627011	-	-	-	-
TP123	0 - 0.1	8/11/2018	TP123_0.0_0.1	Normal	soil	627011	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA01	Field_D	soil	627011	-	-	-	-
TP124	0 - 0.1	8/11/2018	QA02	Interlab_D	soil	ES1833667	-	-	-	-
TP124	0 - 0.1	8/11/2018	TP124_0.0_0.1	Normal	soil	627011	<0.1	<0.1	<0.1	<0.1
TP124	0.6 - 0.7	8/11/2018	TP124_0.6_0.7	Normal	soil	627011	-	-	-	-
TP125	0.2 - 0.3	8/11/2018	TP125_0.2_0.3	Normal	soil	627011	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevai

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphtha

#5 Nil

	Metals								BTEXN							
	Arsenic (filtered)	Cadmium (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)	Lead (filtered)	Mercury (filtered)	Nickel (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	F1 (C6-C10 minus BTEX)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.005	1	1	1	1	2	3	10	20
NEPM 2013 Table 1C GILs, Fresh Waters		0.0002[#1]	0.001[#2]	0.0014[#1]	0.0034[#1]	6E-05[#3]	0.011[#1]	0.008[#1]	950			350	200[#4]		16	
NEPM 2013 Table 1C GILs, Drinking Water	0.01	0.002[#1]	0.05	2[#1]	0.01[#1]	0.001	0.02[#1]		1	800	300			600		
NEPM 2013 Table 1A(4) HSL A/B Res GW for Vapour Intrusion, Sand																
4-8m									800	NL[#5]	NL[#5]			NL[#5]	NL[#5]	1,000[#6]
ANZECC 2000 FW Med-Low Reliability	**0.013[#8]**	**0.0002**		**0.0014**	**0.0034**		**0.011**	**0.008**	**950**	**180**	**80**	**350**			**16**	

Location Code	Depth	Date	Field ID	Sample Type	Matrix Type	Lab Report Number												
BH116	5 - 5.1	8/11/2018	BH116	Normal	water	627174	0.003	**0.0005**	<0.001	**0.017**	0.001	<0.0001	**0.019**	**0.027**	<1	<1	2	<1	<2	<3	<10	<20

Comments

#1 Values calculated using hardness of 30 mg/L CaCO3. Refer ANZECC & ARMCANZ (2000) for site specific hardness guidance

#2 Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.

#3 Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance.

#4 Measurement based on value for p-Xylene

#5 Not limiting: Derived water HSL exceeds water solubility limit

#6 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#7 To obtain F2 subtract napthalene from the >C10 - C16 fraction.

							TRH - NEPM 2013						TRH - NEPM 1999										
							C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							20	50	50	100	100	100	20	50	100	100	100	1	1	1	1	1	1
NEPM 2013 Table 1C GILs, Fresh Waters																							
NEPM 2013 Table 1C GILs, Drinking Water																						0.01	
NEPM 2013 Table 1A(4) HSL A/B Res GW for Vapour Intrusion, Sand																							
4-8m								1,000[#7]															
ANZECC 2000 FW Med-Low Reliability																				0.01		0.1	
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**																		
BH116	5 - 5.1	8/11/2018	BH116	Normal	water		<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1

Comments

#1 Values calculated using hardness of 30 mg/L CaCO3. Refer ANZECC & ARMCANZ (2000) for site specific hardness guidance

#2 Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.

#3 Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for fi

#4 Measurement based on value for p-Xylene

#5 Not limiting: Derived water HSL exceeds water solubility limit

#6 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#7 To obtain F2 subtract napthalene from the >C10 - C16 fraction.

							PAHs										
							Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							1	1	1	1	1	1	1	1	1	1	1
NEPM 2013 Table 1C GILs, Fresh Waters														16			
NEPM 2013 Table 1C GILs, Drinking Water																	
NEPM 2013 Table 1A(4) HSL A/B Res GW for Vapour Intrusion, Sand																	
4-8m														999,999,000[#5]			
ANZECC 2000 FW Med-Low Reliability											**1**			**16**	**0.6**		
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**												
BH116	5 - 5.1	8/11/2018	BH116	Normal	water		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Comments

#1 Values calculated using hardness of 30 mg/L CaCO3. Refer ANZECC & ARMCANZ (2000) for site specific hardness guidance

#2 Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.

#3 Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for fi

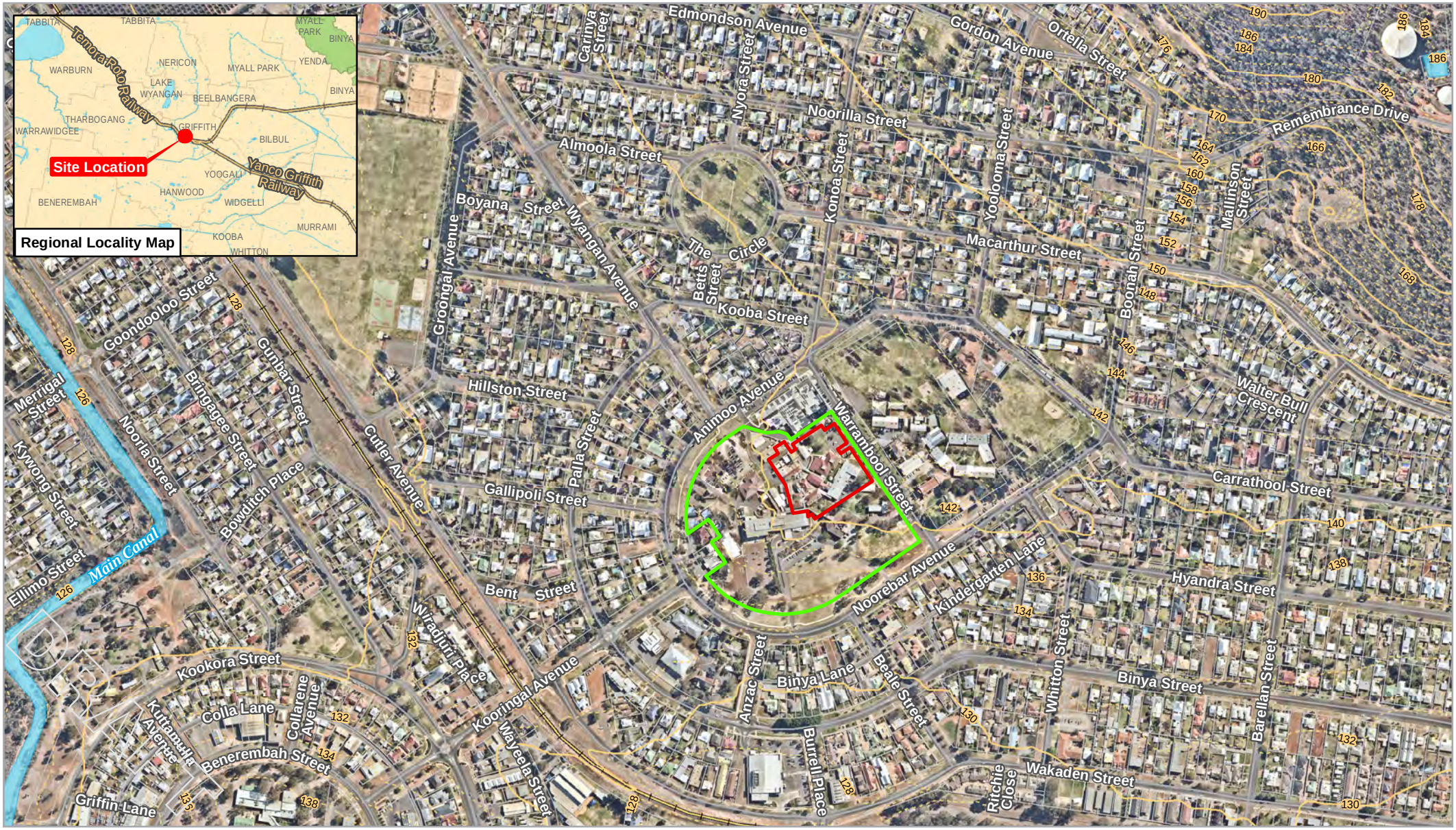
#4 Measurement based on value for p-Xylene

#5 Not limiting: Derived water HSL exceeds water solubility limit

#6 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#7 To obtain F2 subtract napthalene from the >C10 - C16 fraction.

GHD Stage 2 Development Area Phase 2 Assessment Figures and Laboratory Results Summary Tables



Legend

- Stage 1 Development Area (Approximate)
- Stage 2 Development Area
- Waterbodies
- Cadastre
- Roads
- Railways
- Contours

Paper Size ISO A4

0 50 100 150 200

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

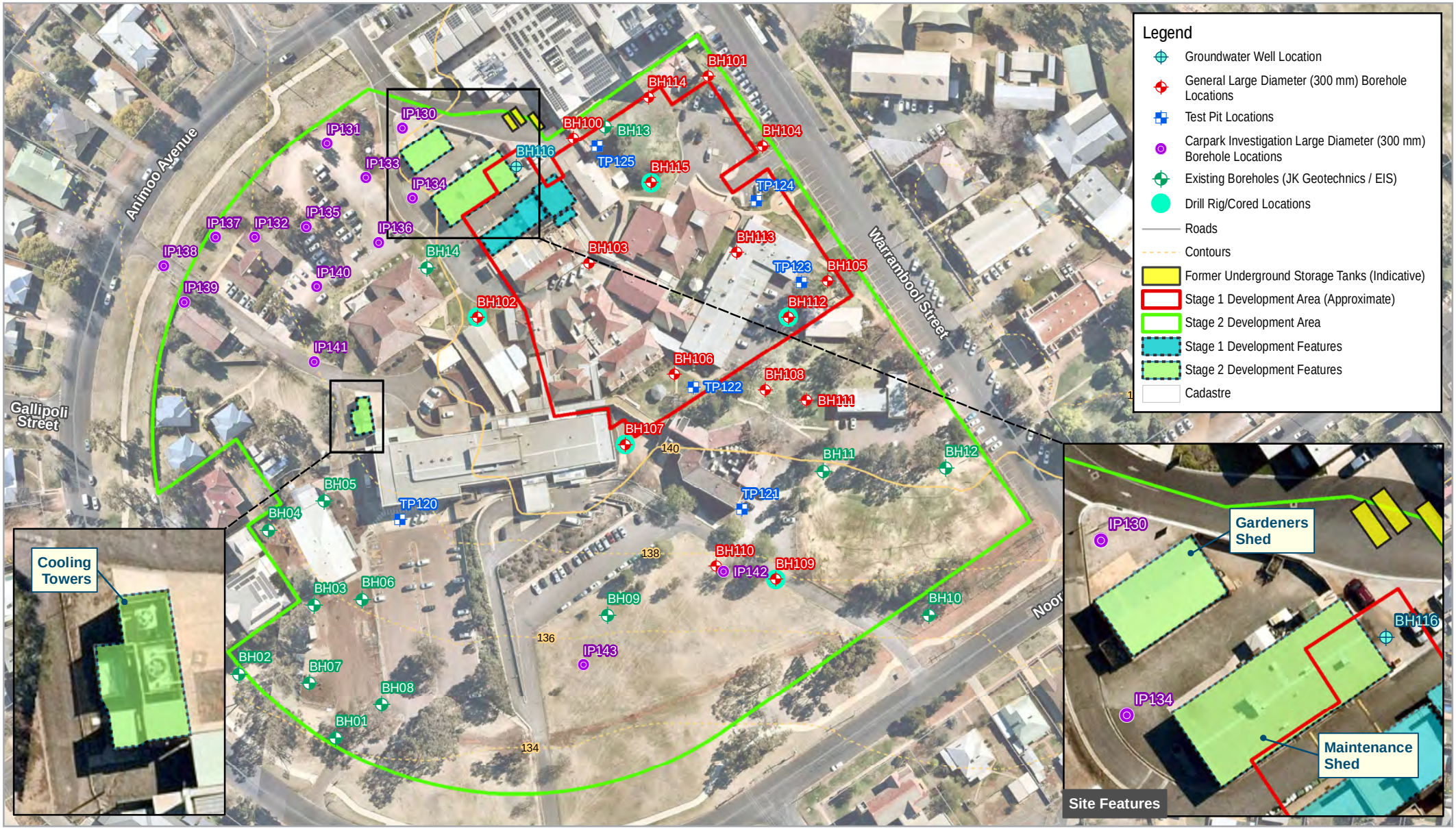
Health Infrastructure
Griffith Hospital Redevelopment
Geotechnical Investigation and Contamination Assessment

Stage 2 Development Area
Site Locality Plan

Project No. 21-27721
Revision No. A
Date 29 Nov 2018

FIGURE 1

Data source: General topo - NSW LPI DTDB 2012. Cadastre - NSW LPI DCDB 2012. Aerial imagery - Nearmap (Image date: 30 Sept 2018, Extraction date: 23 November 2018). Existing borehole locations - JK Geotechnics, 2017 (Borehole Location Plan Report No. 30991L, Fig. No. 2). Created by: kqvelasco



DRAFT

Paper Size ISO A4

0 20 40 60 80

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

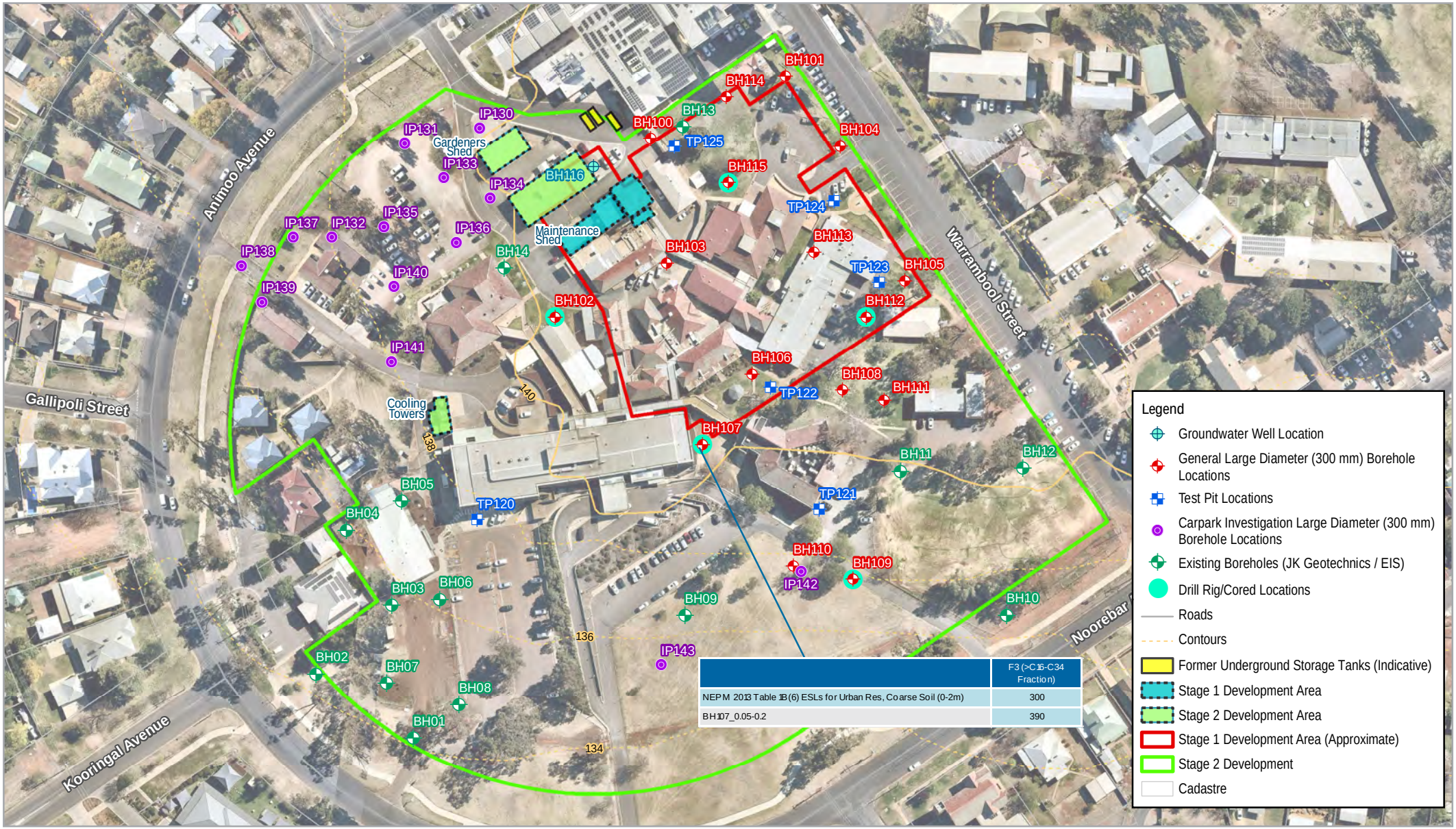
Health Infrastructure
Griffith Hospital Redevelopment
Geotechnical Investigation and Contamination Assessment

Stage 2 Development Area
Sampling Location Plan and Site Features

Project No. 21-27721
Revision No. A
Date 29 Nov 2018

FIGURE 2

Data source: General topo - NSW LPI DTDB 2012. Cadastre - NSW LPI DCDB 2012. Aerial imagery - Nearmap (Image date: 30 Sept 2018, Extraction date: 23 November 2018). Existing borehole locations - JK Geotechnics, 2017 (Borehole Location Plan Report No. 30991L, Fig. No. 2) . Created by: kqvelasco



	F3 (>C16-C34 Fraction)
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)	300
BH107_0.05-0.2	390

DRAFT

Paper Size ISO A4

0 20 40 60 80

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

Health Infrastructure
Griffith Hospital Redevelopment
Geotechnical Investigation and Contamination Assessment

Project No. 21-27721
Revision No. A
Date 29 Nov 2018

Stage 2 Development Area Guideline Exceedance Locations

FIGURE 3

Data source: General topo - NSW LPI DTDB 2012. Cadastre - NSW LPI DCDB 2012. Aerial imagery - Nearmap (Image date: 30 Sept 2018, Extraction date: 23 November 2018). Existing borehole locations - JK Geotechnics, 2017 (Borehole Location Plan Report No. 30991L, Fig. No. 2). Created by: kqvelasco

Appendix D Table QA1
Quality Samples

Health Infrastructure NSW
Griffith Hospital Redevelopment
– Contamination Investigation

	Groundwater QA/QC Samples			Soil QA/QC Samples							
Lab Report Number	627174	627174	627174	626759	627011	626158	626161	626158	626161	627011	627011
Field ID	RB02_GW	TB02	TS02	BH103	RB01_SOIL	TB1	TB2	TS1	TS2	TB01	TS01
Sampled_Date/Time	8/11/2018	8/11/2018	8/11/2018	2/11/2018	8/11/2018		31/10/2018		31/10/2018	8/11/2018	8/11/2018
Sample Type	Rinsate	Trip_B	Trip_S	Rinsate	Rinsate	Trip_B	Trip_B	Trip_S	Trip_S	Trip_B	Trip_S
Matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water	Soil	Soil
Method_Type	**ChemName**											
F1-BTEX	F1 (C6-C10 minus BTEX)		<20				<20	<20				
Heavy Metal	Arsenic	<0.001			<0.001	<0.001						
	Arsenic (Filtered)											
	Cadmium	<0.0002			<0.0002	<0.0002						
	Cadmium (Filtered)											
	Chromium (III+VI)	<0.001			<0.001	<0.001						
	Chromium (III+VI) (Filtered)											
	Copper	<0.001			<0.001	<0.001						
	Copper (Filtered)											
	Lead	<0.001			<0.001	<0.001						
	Lead (Filtered)											
	Mercury	<0.0001			<0.0001	<0.0001						
	Mercury (Filtered)											
	Nickel	<0.001			<0.001	<0.001						
	Nickel (Filtered)											
	Zinc	<0.005			<0.005	<0.005						
	Zinc (Filtered)											
Organic	Naphthalene (BTEXN)		<10	100*			<10	<10	78*	99*	<0.5	83*
	F1 (C6-C10 minus BTEX)										<20	
	C6-C10 Fraction		<20	77*			<20	<20	81*	72*	<20	110*
	F2 (>C10-C16 minus Naphthalene)											
	>C10-C16 Fraction											
	F3 (>C16-C34 Fraction)											
	F4 (>C34-C40 Fraction)											
	>C10-C40 (Sum of Total)											
	C6-C9 Fraction		<20	76*			<20	<20	76*	75*	<20	100*
Volatile	Benzene		<1	100*			<1	<1	110*	110*	<0.1	110*
	Toluene		<1	100*			<1	<1	94*	88*	<0.1	100*
	Ethylbenzene		<1	110*			<1	<1	94*	85*	<0.1	100*
	Xylene (o)		<1	110*			<1	<1	100*	97*	<0.1	100*
	Xylene (m & p)		<2	110*			<2	<2	98*	96*	<0.2	100*
	Xylene Total		<3	110*			<3	<3	97*	89*	<0.3	100*

* Results reported as percentage recovery.

Filter: Lab_Report_Number in('627011','627174','626734','626759','626158','626161')
\\ghdnet\ghd\AU\Sydney\Projects\21\27721\Contamination\Esdat_output\3. QA\QA2 - FieldBlankWater.xlsx

Appendix D
Table QA2
Duplicate RPD Comparison

Lab Report Number	626161	626161		626161	626161		626161	626161		627011	627011		627011	ES1833667		627011	ES1833667	
Field ID	BH108 0.7-1.0	QA3	RPD	IP133 0.4-0.6	QA2	RPD	IP136 0.4-0.6	QA1	RPD	TP124 0.0 0.1	QA01	RPD	TP124 0.0 0.1	QA02	RPD	TP122 0.0 0.1	QA04	RPD
Sampled Date/Time	1/11/2018	1/11/2018		31/10/2018	31/10/2018		31/10/2018	31/10/2018		8/11/2018	8/11/2018		8/11/2018	8/11/2018		8/11/2018	8/11/2018	

Method_Type	ChemName	Units	EQL																	
Inorganic	Moisture Content (dried @ 103°C)	%	1	8.2	7	16	3.1	2.9	7	11	12	9	13	13	0	13					
Heavy Metal	Arsenic	mg/kg	2 : 5 (Interlab)	3	2.7	11	2.6	2.7	4	3.3	3.8	14	2.5	2.7	8	2.5	<5	0	2.1	<5	0
	Cadmium	mg/kg	0.4 : 1 (Interlab)	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<1	0	<0.4	<1	0
	Chromium (III+VI)	mg/kg	5 : 2 (Interlab)	23	23	0	19	19	0	33	33	0	**27**	**37**	**31**	**27**	**19**	**35**	16	13	21
	Copper	mg/kg	5	8.7	7.8	11	7.6	7.5	1	11	12	9	11	15	31	11	9	20	7	6	15
	Lead	mg/kg	5	9.7	10	3	14	14	0	9.1	9.5	4	**14**	**75**	**137**	14	18	25	6.9	6	14
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	5 : 2 (Interlab)	13	9.6	30	8.5	8	6	22	24	9	**26**	**47**	**58**	**26**	**19**	**31**	5.7	4	35
	Zinc	mg/kg	5	20	22	10	31	27	14	21	22	5	41	52	24	41	41	0	26	21	21
Organic	Naphthalene (BTEXN)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5					
Volatile	Benzene	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.2	0	<0.1	<0.2	0
	Toluene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Ethylbenzene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Xylene (o)	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Xylene (m & p)	mg/kg	0.2 : 0.5 (Interlab)	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.5	0	<0.2	<0.5	0
	Xylene Total	mg/kg	0.3 : 0.5 (Interlab)	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.5	0	<0.3	<0.5	0
Organic	F1 (C6-C10 minus BTEX)	mg/kg	20 : 10 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<10	0	<20	<10	0
	C6-C10 Fraction	mg/kg	20 : 10 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<10	0	<20	<10	0
	F2 (>C10-C16 minus Naphthalene)	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
	>C10-C16 Fraction	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
	F3 (>C16-C34 Fraction)	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	120	110	9	120	<100	18	<100	<100	0
	F4 (>C34-C40 Fraction)	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
	>C10-C40 (Sum of Total)	mg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<100	0	<100	<100	0	120	110	9	120	<50	82	<100	<50	0
	C6-C9 Fraction	mg/kg	20 : 10 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<10	0	<20	<10	0
TPH	C10-C14 Fraction	mg/kg	20 : 50 (Interlab)	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0	<20	<50	0	<20	<50	0
	C15-C28 Fraction	mg/kg	50 : 100 (Interlab)	<50	<50	0	<50	<50	0	<50	<50	0	77	72	7	77	<100	0	<50	<100	0
	C29-C36 Fraction	mg/kg	50 : 100 (Interlab)	<50	<50	0	<50	<50	0	<50	<50	0	66	57	15	66	<100	0	<50	<100	0
	C10-C36 (Sum of Total)	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	143	129	10	143	<50	96	<50	<50	0
PAH	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a) pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo[b+j]fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Naphthalene-PAH	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5					
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	PAHs (Sum of total) - Lab calc	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	mg/kg	0.5	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0
	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0

*RPDs have only been considered where a concentration is greater than 10 times the EQL.
**GHD adopts a nominal acceptance criterion of < 50% RPD for field duplicates and splits for organics and an acceptance criterion of < 30% RPD for inorganics.
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

	Inorganics			Particle Size Analysis	Exchangeable cations	TOC	Asbestos			
	Electrical conductivity (lab)	Moisture Content (dried @ 103°C)	pH (aqueous extract)	Clay (<2 µm)	CEC	Total Organic Carbon	Organic Fibres - Comment	Respirable Fibres - Comment	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil
	µS/cm	%	pH Units	%	meq/100g	%	Comment	Comment	%w/w	%w/w
EQL	10	1	0.1	1	0.05	0.1				
NEPM 2013 Table 1A(1) HIL B Res										
NEPM 2013 Table 1A(1) HIL C Rec										
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand 0-1m										
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil									0.02	0.001[#11]
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**									
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	-	10	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	7.2	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	-	9.9	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	13	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	-	13	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	190	24	9.0	12	43	0.3	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	7.6	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	8.2	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	7.0	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	24	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	8.3	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	14	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	-	3.1	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	2.9	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	11	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	12	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	6.1	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	5.1	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	8.9	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	13	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	10.0	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).

#2 In the absence of a guideline value for total chromium, chromium VI value adopted

#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.

#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.

#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)

#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the conc of each carc. PAH in sample by its BaP TEF (ref Table 1A(1)) & summing

#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc dioxin like PCBs) should be undertaken

#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.

#10 Not limiting: Derived soil HSL exceeds soil saturation concentration

#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.

#12 Nil

		Metals								BTEXN			
	Asbestos Reported Result	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)
	Comment	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		2	0.4	5	5	5	0.1	5	5	0.1	0.1	0.1	0.1
NEPM 2013 Table 1A(1) HIL B Res		500[#1]	150	500[#2]	30,000	1,200[#3]	120[#4]	1,200	60,000				
NEPM 2013 Table 1A(1) HIL C Rec		300[#1]	90	300[#2]	17,000	600[#3]	80[#4]	1,200	30,000				
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand													
0-1m										0.5	160	55	
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil													
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**							
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	No asbestos detected at the reporting limit of 0.01% w/w.	2.6	<0.4	130	40	10	<0.1	190	78	<0.1	<0.1	<0.1	<0.1
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	2.6	<0.4	27	7.4	6.5	<0.1	16	18	<0.1	<0.1	<0.1	<0.1
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	2.4	<0.4	25	11	13	<0.1	15	53	<0.1	<0.1	<0.1	<0.1
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	2.7	<0.4	22	8.5	8.7	<0.1	12	23	<0.1	<0.1	<0.1	<0.1
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	2.6	<0.4	19	9.0	10	<0.1	11	32	<0.1	<0.1	<0.1	<0.1
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	2.6	<0.4	19	9.2	9.9	<0.1	13	20	<0.1	<0.1	<0.1	<0.1
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	3.0	<0.4	23	8.7	9.7	<0.1	13	20	<0.1	<0.1	<0.1	<0.1
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	2.7	<0.4	23	7.8	10	<0.1	9.6	22	<0.1	<0.1	<0.1	<0.1
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	2.9	<0.4	12	<5	12	<0.1	8.6	7.7	<0.1	<0.1	<0.1	<0.1
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	3.3	<0.4	24	7.3	8.2	<0.1	9.2	17	<0.1	<0.1	<0.1	<0.1
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	-	2.6	<0.4	19	7.6	14	<0.1	8.5	31	<0.1	<0.1	<0.1	<0.1
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	2.7	<0.4	19	7.5	14	<0.1	8.0	27	<0.1	<0.1	<0.1	<0.1
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	3.3	<0.4	33	11	9.1	<0.1	22	21	<0.1	<0.1	<0.1	<0.1
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	3.8	<0.4	33	12	9.5	<0.1	24	22	<0.1	<0.1	<0.1	<0.1
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	2.7	<0.4	24	8.1	10	<0.1	9.4	24	<0.1	<0.1	<0.1	<0.1
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	2.3	<0.4	24	7.1	6.6	<0.1	12	15	<0.1	<0.1	<0.1	<0.1
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	<2	<0.4	16	<5	6.5	<0.1	<5	14	<0.1	<0.1	<0.1	<0.1
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	No asbestos detected at the reporting limit of 0.01% w/w.	5.6	<0.4	81	27	8.5	<0.1	100	52	<0.1	<0.1	<0.1	<0.1
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	2.6	<0.4	69	24	6.8	<0.1	84	43	<0.1	<0.1	<0.1	<0.1

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered
#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental r
#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogen
#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessme
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

									TRH - NEPM 2013							TRH - NEPM 1999						
									Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene
									mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL									0.2	0.3	0.5	20	20	50	50	100	100	100	20	20	50	50	50	0.5	0.5
NEPM 2013 Table 1A(1) HIL B Res																									
NEPM 2013 Table 1A(1) HIL C Rec																									
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																									
0-1m										40	3	45[#8]		110[#9]											
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																									
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																			
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	390	<100	390	<20	<20	280	120	400	<0.5	<0.5
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered
#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental r
#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogen
#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessme
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

								PAHs													
								Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc
								mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL								0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HIL B Res																						400[#5]	4[#6]	4[#6]
NEPM 2013 Table 1A(1) HIL C Rec																						300[#5]	3[#6]	3[#6]
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand																								
0-1m																			3					
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																								
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																		
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered
#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental r
#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogen
#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessme
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

		OC Pesticides																
	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	Organochlorine pesticides EPAV/c	Other organochlorine pesticides EPAV/c	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HIL B Res	4[#6]						10		90				600				
NEPM 2013 Table 1A(1) HIL C Rec	3[#6]						10		70				400				
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand 0-1m																	
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																	
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**														
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	0.08	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
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#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Bolstar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	1	0.2	0.2	0.2	0.2	0.2	0.2	2	0.2
NEPM 2013 Table 1A(1) HIL B Res	20				10		15	500	30					340			
NEPM 2013 Table 1A(1) HIL C Rec	20				10		10	400	30					250			
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand 0-1m																	
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																	
Location Code **Depth** **Date** **Field ID** **Sample Type** **Matrix Type** **Lab Report Number**																	
BH100 0.05 - 0.15 2/11/2018 BH100 0.05-0.15M Normal soil 626734	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH100 0.4 - 0.6 2/11/2018 BH100 0.4-0.6M Normal soil 626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102 0.4 - 0.5 31/10/2018 BH102_0.4-0.5 Normal soil 626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH102 0.9 - 1 31/10/2018 BH102_0.9-1.0 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107 0.05 - 0.2 30/10/2018 BH107_0.05-0.2 Normal soil 626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH107 1.7 - 2 30/10/2018 BH107_1.7-2.0 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108 0.05 - 0.2 1/11/2018 BH108_0.05-0.2 Normal soil 626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH108 0.7 - 1 1/11/2018 BH108_0.7-1.0 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108 0.7 - 1 1/11/2018 QA3 Field_D soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109 0.05 - 0.2 30/10/2018 BH109_0.05-0.2 Normal soil 626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
BH109 1.6 - 1.9 30/10/2018 BH109_1.6-1.9 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110 0.05 - 0.2 1/11/2018 BH110_0.05-0.2 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111 0.1 - 0.2 1/11/2018 BH111_0.1-0.2 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130 0.1 - 0.2 31/10/2018 IP130_0.1-0.2 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133 0.4 - 0.6 31/10/2018 IP133_0.4-0.6 Normal soil 626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2
IP133 0.4 - 0.6 31/10/2018 QA2 Field_D soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136 0.4 - 0.6 31/10/2018 IP136_0.4-0.6 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136 0.4 - 0.7 31/10/2018 QA1 Field_D soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP137 0.05 - 0.2 31/10/2018 IP137_0.05-0.2 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP138 0.05 - 0.2 31/10/2018 IP138_0.05-0.2 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140 0.4 - 0.6 31/10/2018 IP140_0.4-0.6 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP143 0.05 - 0.1 31/10/2018 IP143_0.05-0.1 Normal soil 626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP120 0.2 - 0.3 3/11/2018 TP120 0.2-0.3M Normal soil 626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP121 0.4 - 0.6 2/11/2018 TP121 0.4-0.6M Normal soil 626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
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#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessme
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

							OP Pesticides													
							Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							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	2	0.2
NEPM 2013 Table 1A(1) HIL B Res																							
NEPM 2013 Table 1A(1) HIL C Rec																							
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand 0-1m																							
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																							
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**																	
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<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	<2	<0.2
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<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	<2	<0.2
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<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	<2	<0.2
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<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	<2	<0.2
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<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	<2	<0.2
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<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	<2	<0.2
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
#3 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered
#4 Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental r
#5 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogen
#6 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the c
#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessme
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

											PCBs							
	Omethoate	Parathion	Phorate	Pirimiphos-methyl	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1A(1) HIL B Res																	1 #7
NEPM 2013 Table 1A(1) HIL C Rec																	1 #7
NEPM 2013 Table 1A(3) HSL A/B Res Soil for Vapour Intrusion, Sand 0-1m																	
NEPM 2013 Table 7 HSL C Rec Asbestos contamination in soil																	
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**												
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where
#2 In the absence of a guideline value for total chromium, chromium VI value adopted
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#7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessme
#8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#9 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10 Not limiting: Derived soil HSL exceeds soil saturation concentration
#11 Only applies where the FA & AF are able to be quantified by gravimetric procedures. Not applicable to free fibres.
#12 Nil

									BTEXN							TRH - NEPM 2013				
									Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)
									mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL									0.1	0.1	0.1	0.1	0.2	0.3	0.5	20	20	50	50	100
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space									120	18,000	5,300			15,000	1,900	5,100		3,800		5,300
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial									430	99,000	27,000			81,000	11,000	26,000		20,000		27,000
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**														
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	390
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100

Comments
#1 Nil

									TRH - NEPM 1999								
							F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							100	100	20	20	50	50	50	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space							7,400											
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial							38,000											
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**												
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<100	390	<20	<20	280	120	400	<0.5	<0.5	<0.5	<0.5	<0.5
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5

Comments
#1 Nil

							PAHs											
							Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a.h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space															1,900			
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial															11,000			
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**												
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Comments
#1 Nil

							Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc
							mg/kg	mg/kg	mg/kg
EQL							0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space									
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial									
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**			
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.5	0.6	1.2
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<0.5	0.6	1.2
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.5	0.6	1.2
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<0.5	0.6	1.2
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.5	0.6	1.2
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<0.5	0.6	1.2
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<0.5	0.6	1.2
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<0.5	0.6	1.2
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<0.5	0.6	1.2
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<0.5	0.6	1.2
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.5	0.6	1.2
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<0.5	0.6	1.2
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<0.5	0.6	1.2
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<0.5	0.6	1.2
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<0.5	0.6	1.2
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<0.5	0.6	1.2
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<0.5	0.6	1.2
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<0.5	0.6	1.2
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<0.5	0.6	1.2

Comments
#1 Nil

							Inorganics			Particle Size Analysis	Exchangeable cations	TOC			Asbestos	
							Electrical conductivity (lab)	Moisture Content (dried @ 103°C)	pH (aqueous extract)	Clay (<2 µm)	CEC	Total Organic Carbon	Organic Fibres - Comment	Respirable Fibres - Comment	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil
							µS/cm	%	pH Units	%	meq/100g	%	Comment	Comment	%w/w	%w/w
EQL							10	1	0.1	1	0.05	0.1				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																
NEPM 2013 EIL-Urban Residential- Public Open Space																
0-2m																
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																
0-2m																
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**										
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	-	10	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	7.2	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	-	9.9	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	13	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	-	13	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	190	24	9.0	12	43	0.3	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	7.6	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	8.2	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	7.0	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	24	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	8.3	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	14	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	-	3.1	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	2.9	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	11	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	12	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	6.1	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	5.1	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	8.9	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	13	-	-	-	-	Organic fibres detected.	No respirable fibres detected.	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	10.0	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

		Metals									
	Asbestos Reported Result	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene
	Comment	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		2	0.4	5	5	5	0.1	5	5	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil											
NEPM 2013 EIL-Urban Residential- Public Open Space											
0-2m		100		410	230	1,100		350	1000		
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil											
0-2m										50	85

Location Code	Depth	Date	Field ID	Sample Type	Matrix Type	Lab Report Number										
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	No asbestos detected at the reporting limit of 0.01% w/w.	2.6	<0.4	130	40	10	<0.1	190	78	<0.1	<0.1
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	2.6	<0.4	27	7.4	6.5	<0.1	16	18	<0.1	<0.1
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	2.4	<0.4	25	11	13	<0.1	15	53	<0.1	<0.1
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	2.7	<0.4	22	8.5	8.7	<0.1	12	23	<0.1	<0.1
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	2.6	<0.4	19	9.0	10	<0.1	11	32	<0.1	<0.1
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	2.6	<0.4	19	9.2	9.9	<0.1	13	20	<0.1	<0.1
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	3.0	<0.4	23	8.7	9.7	<0.1	13	20	<0.1	<0.1
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	2.7	<0.4	23	7.8	10	<0.1	9.6	22	<0.1	<0.1
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	2.9	<0.4	12	<5	12	<0.1	8.6	7.7	<0.1	<0.1
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	3.3	<0.4	24	7.3	8.2	<0.1	9.2	17	<0.1	<0.1
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	-	2.6	<0.4	19	7.6	14	<0.1	8.5	31	<0.1	<0.1
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	2.7	<0.4	19	7.5	14	<0.1	8.0	27	<0.1	<0.1
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	3.3	<0.4	33	11	9.1	<0.1	22	21	<0.1	<0.1
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	3.8	<0.4	33	12	9.5	<0.1	24	22	<0.1	<0.1
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	2.7	<0.4	24	8.1	10	<0.1	9.4	24	<0.1	<0.1
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	2.3	<0.4	24	7.1	6.6	<0.1	12	15	<0.1	<0.1
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	No asbestos detected at the reporting limit of 0.01% w/w.	<2	<0.4	16	<5	6.5	<0.1	<5	14	<0.1	<0.1
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	No asbestos detected at the reporting limit of 0.01% w/w.	5.6	<0.4	81	27	8.5	<0.1	100	52	<0.1	<0.1
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	2.6	<0.4	69	24	6.8	<0.1	84	43	<0.1	<0.1

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

	BTEXN					TRH - NEPM 2013							TRH - NEPM 19		
	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.2	0.3	0.5	20	20	50	50	100	100	100	20	20	50
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil							700[#1]		1,000[#1]	2,500	10,000				
NEPM 2013 EIL-Urban Residential- Public Open Space															
0-2m					170										
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil															
0-2m	70			105		180[#3]			120[#4]	300	2,800				

Location Code	Depth	Date	Field ID	Sample Type	Matrix Type	Lab Report Number													
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	390	<100	390	<20	<20	280
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

							99		PAHs													
							C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																					
NEPM 2013 EIL-Urban Residential- Public Open Space																					
0-2m																					
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																					
0-2m													0.7								
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**															
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	120	400	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

									Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4-DDE
									mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL									0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.05
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																		
NEPM 2013 EIL-Urban Residential- Public Open Space																		
0-2m									170									
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																		
0-2m																		
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**												
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	<0.1	<0.1	<0.05	<0.05	<0.05
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	<0.1	<0.1	<0.05	<0.05	<0.05
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-

									a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane					
									mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
EQL									0.05	0.05	0.05	0.05	0.1					
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																		
NEPM 2013 EIL-Urban Residential- Public Open Space																		
0-2m																		
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																		
0-2m																		
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1						
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-						
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.05	<0.05	<0.05	0.08	<0.05	<0.1						
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-	-						
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1						
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-	-						
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1						
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-	-						
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-	-						
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1						
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-	-						
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-						
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-						
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-						
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1						
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-	-						
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-						
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-	-						
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-						
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-						
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-						
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-	-						
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-	-						
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-						

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

							OC Pesticides													
							d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																					
NEPM 2013 EIL-Urban Residential- Public Open Space																					
0-2m									180	180											
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																					
0-2m																					
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**															
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

							Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Bolstar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.05	1	0.2	0.2	0.2	0.2	0.2	0.2	2	0.2	0.2	0.2	0.2	0.2	0.2
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																				
NEPM 2013 EIL-Urban Residential- Public Open Space																				
0-2m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																				
0-2m																				
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**														
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.05	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

											OP Pesticides									
											EPN	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)
											mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL											0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																				
NEPM 2013 EIL-Urban Residential- Public Open Space																				
0-2m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																				
0-2m																				
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**														
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-

											OP Pesticides									
											Monocrotophos	Naled (Dibrom)	Omethoate	Parathion	Phorate					
											mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
EQL											2	0.2	2	0.2	0.2					
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																				
NEPM 2013 EIL-Urban Residential- Public Open Space																				
0-2m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																				
0-2m																				
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**														
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<2	<0.2	<2	<0.2	<0.2					
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-					
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<2	<0.2	<2	<0.2	<0.2					
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-					
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<2	<0.2	<2	<0.2	<0.2					
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-					
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<2	<0.2	<2	<0.2	<0.2					
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-					
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-					
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<2	<0.2	<2	<0.2	<0.2					
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-					
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-					
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-					
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-					
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<2	<0.2	<2	<0.2	<0.2					
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-					
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-					
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-					
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-					
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-					
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-					
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-					
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-					
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-					

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

											PCBs							
							Pirimiphos-methyl	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL							0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																				
NEPM 2013 EIL-Urban Residential- Public Open Space																				
0-2m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																				
0-2m																				
Location Code	**Depth**	**Date**	**Field ID**	**Sample Type**	**Matrix Type**	**Lab Report Number**														
BH100	0.05 - 0.15	2/11/2018	BH100 0.05-0.15M	Normal	soil	626734	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH100	0.4 - 0.6	2/11/2018	BH100 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	0.4 - 0.5	31/10/2018	BH102_0.4-0.5	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH102	0.9 - 1	31/10/2018	BH102_0.9-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107	0.05 - 0.2	30/10/2018	BH107_0.05-0.2	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH107	1.7 - 2	30/10/2018	BH107_1.7-2.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.05 - 0.2	1/11/2018	BH108_0.05-0.2	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH108	0.7 - 1	1/11/2018	BH108_0.7-1.0	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	0.7 - 1	1/11/2018	QA3	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109	0.05 - 0.2	30/10/2018	BH109_0.05-0.2	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH109	1.6 - 1.9	30/10/2018	BH109_1.6-1.9	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	0.05 - 0.2	1/11/2018	BH110_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111	0.1 - 0.2	1/11/2018	BH111_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP130	0.1 - 0.2	31/10/2018	IP130_0.1-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP133	0.4 - 0.6	31/10/2018	IP133_0.4-0.6	Normal	soil	626161	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
IP133	0.4 - 0.6	31/10/2018	QA2	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.6	31/10/2018	IP136_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP136	0.4 - 0.7	31/10/2018	QA1	Field_D	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP137	0.05 - 0.2	31/10/2018	IP137_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP138	0.05 - 0.2	31/10/2018	IP138_0.05-0.2	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP140	0.4 - 0.6	31/10/2018	IP140_0.4-0.6	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IP143	0.05 - 0.1	31/10/2018	IP143_0.05-0.1	Normal	soil	626161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP120	0.2 - 0.3	3/11/2018	TP120 0.2-0.3M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP121	0.4 - 0.6	2/11/2018	TP121 0.4-0.6M	Normal	soil	626734	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

#1 Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

#2 Develop site specific based on CEC, pH, clay content, state and traffic volume

#3 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#4 Errata 30 April 2014 - Naphthalene should not be subtracted from >C10-C16 (as there is no separate ESL for naphthalene)

#5 Nil

EIS 2017 Assessment Figures and Laboratory Results Summary Tables

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SITE LOCATION PLAN

ENVIRONMENTAL INVESTIGATION SERVICES

EIS

SAMPLE LOCATION PLAN

ENVIRONMENTAL INVESTIGATION SERVICES

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TABLE A
SOIL LABORATORY RESULTS COMPARED TO HILs
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium VI [2]	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P TEQ [3]	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC) [1]			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH1	0-0.1	Topsoil: silty clay	LPQL	LPQL	23	8	8	LPQL	8	16	0.53	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH2	0-0.3	Topsoil: silty clay	LPQL	LPQL	23	9	20	LPQL	8	26	0.4	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH3	0-0.45	Sandy silty clay	4	LPQL	23	8	9	LPQL	7	30	0.54	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH4	0-0.5	Silty clay	LPQL	LPQL	21	16	10	0.2	6	32	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	0-0.2	Fill: clayey gravel	LPQL	LPQL	43	30	9	LPQL	73	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	1.3-1.5	Silty clay	LPQL	LPQL	17	6	6	LPQL	7	9	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH6	0-0.2	Fill: gravelly clay	LPQL	LPQL	28	9	11	LPQL	9	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH6	0.5-0.95	Silty clay	LPQL	LPQL	21	5	6	LPQL	6	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH7	0.5-0.6	Silty clay	LPQL	LPQL	21	7	7	LPQL	9	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH8	0.1-0.3	Silty clay	LPQL	LPQL	20	10	27	LPQL	9	42	0.6	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH9	0-0.2	Topsoil: silty clay	LPQL	LPQL	16	6	10	LPQL	6	20	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH10	0-0.2	Sandy silt	LPQL	LPQL	19	5	12	LPQL	6	15	1.7	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH11	0-0.2	Sandy silt	LPQL	LPQL	19	7	19	LPQL	7	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH12	0-0.2	Sandy silt	LPQL	LPQL	20	7	12	LPQL	7	22	0.3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH13	0-0.2	Sandy clayey silt	LPQL	LPQL	21	10	17	LPQL	9	44	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH14	0-0.2	Fill: silty clay	LPQL	LPQL	23	13	14	LPQL	14	50	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
Total Number of Samples			16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14
Maximum Value			4	LPQL	43	30	27	0.2	73	50	1.7	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013, HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

2 - The results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.

3 - B(a)P TEQ - Benzo(a)pyrene Toxicity Equivalence Quotient has been calculated based on 8 carcinogenic PAHs and their Toxic Equivalence Factors (TEFs) outlined in NEPM 2013

Concentration above the SAC **VALUE**

Abbreviations:

PAHs: Polycyclic Aromatic Hydrocarbons
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
OPP: Organophosphorus Pesticides
OCP: Organochlorine Pesticides
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
HILs: Health Investigation Levels
NA: Not Analysed
NC: Not Calculated
NSL: No Set Limit
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure

TABLE B
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID [2]
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1	
HSL Land Use Category [1]					**RESIDENTIAL WITH ACCESSIBLE SOIL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0-0.1	Topsoil: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH2	0-0.3	Topsoil: silty clay	0m to < 1m	Clay	LPQL	85	LPQL	LPQL	LPQL	LPQL	LPQL	26
BH3	0-0.45	Sandy silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH4	0-0.5	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH5	0-0.2	Fill: clayey gravel	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH5	1.3-1.5	Silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH6	0-0.2	Fill: gravelly clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH6	0.5-0.95	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH7	0.5-0.6	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH8	0.1-0.3	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH9	0-0.2	Topsoil: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH10	0-0.2	Sandy silt	0m to < 1m	Silt	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH11	0-0.2	Sandy silt	0m to < 1m	Silt	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH12	0-0.2	Sandy silt	0m to < 1m	Silt	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH13	0-0.2	Sandy clayey silt	0m to < 1m	Silt	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH14	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples					16	16	16	16	16	16	16	16
Maximum Value					LPQL	85	LPQL	LPQL	LPQL	LPQL	LPQL	26

Explanation:
1 - Site Assessment Criteria (SAC): NEPM 2013
2 - Field PID values obtained during the investigation

Concentration above the SAC **VALUE**
The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

Abbreviations:
UCL: Upper Level Confidence Limit on Mean Value
HSLs: Health Screening Levels
NA: Not Analysed
NC: Not Calculated
NL: Not Limiting
SAC: Site Assessment Criteria
PQL: Practical Quantitation Limit
LPQL: Less than PQL
NEPM: National Environmental Protection Measure

SITE ASSESSMENT CRITERIA

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1
HSL Land Use Category [1]					**RESIDENTIAL WITH ACCESSIBLE SOIL**						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
BH1	0-0.1	Topsoil: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH2	0-0.3	Topsoil: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH3	0-0.45	Sandy silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH4	0-0.5	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH5	0-0.2	Fill: clayey gravel	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH5	1.3-1.5	Silty clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
BH6	0-0.2	Fill: gravelly clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH6	0.5-0.95	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH7	0.5-0.6	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH8	0.1-0.3	Sandy silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH9	0-0.2	Topsoil: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH10	0-0.2	Sandy silt	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
BH11	0-0.2	Sandy silt	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
BH12	0-0.2	Sandy silt	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
BH13	0-0.2	Sandy clayey silt	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
BH14	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5

TABLE C
SOIL LABORATORY RESULTS COMPARED TO EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category [1]				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																		
							AGED HEAVY METALS-EILs						EILs		ESLs							
				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05
Ambient Background Concentration (ABC) [2]				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH1	0-0.1	Topsoil: silty clay	Fine	NA	NA	NA	LPQL	23	8	8	8	16	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.09
BH2	0-0.3	Topsoil: silty clay	Fine	NA	NA	NA	LPQL	23	9	20	8	26	LPQL	LPQL	LPQL	85	140	LPQL	LPQL	LPQL	LPQL	LPQL	0.07
BH3	0-0.45	Sandy silty clay	Fine	NA	NA	NA	4	23	8	9	7	30	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.08
BH4	0-0.5	Silty clay	Fine	NA	NA	NA	LPQL	21	16	10	6	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	0-0.2	Fill: clayey gravel	Coarse	7.6	33	11	LPQL	43	30	9	73	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	1.3-1.5	Silty clay	Fine	NA	NA	NA	LPQL	17	6	6	7	9	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH6	0-0.2	Fill: gravelly clay	Fine	NA	NA	NA	LPQL	28	9	11	9	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH6	0.5-0.95	Silty clay	Fine	NA	NA	NA	LPQL	21	5	6	6	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH7	0.5-0.6	Silty clay	Fine	NA	NA	NA	LPQL	21	7	7	9	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH8	0.1-0.3	Silty clay	Fine	NA	NA	NA	LPQL	20	10	27	9	42	LPQL	LPQL	LPQL	LPQL	130	LPQL	LPQL	LPQL	LPQL	LPQL	0.1
BH9	0-0.2	Topsoil: silty clay	Fine	NA	NA	NA	LPQL	16	6	10	6	20	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH10	0-0.2	Sandy silt	Fine	NA	NA	NA	LPQL	19	5	12	6	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.2
BH11	0-0.2	Sandy silt	Fine	NA	NA	NA	LPQL	19	7	19	7	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH12	0-0.2	Sandy silt	Fine	NA	NA	NA	LPQL	20	7	12	7	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.05
BH13	0-0.2	Sandy clayey silt	Fine	NA	NA	NA	LPQL	21	10	17	9	44	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH14	0-0.2	Fill: silty clay	Fine	NA	NA	NA	LPQL	23	13	14	14	50	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
Total Number of Samples				1	1	1	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Maximum Value				7.6	33	11	4	43	30	27	73	50	LPQL	LPQL	LPQL	85	140	LPQL	LPQL	LPQL	LPQL	LPQL	0.2

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013

2 - ABC Values for selected metals has been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted)

Concentration above the SAC VALUE

The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

Abbreviations:

EILs: Ecological Investigation Levels
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
UCL: Upper Level Confidence Limit on Mean Value
ESLs: Ecological Screening Levels
NA: Not Analysed
LPQL: Less than PQL
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure
NC: Not Calculated
NSL: No Set Limit
ABC: Ambient Background Concentration

EIL AND ESL ASSESSMENT CRITERIA

Land Use Category [1]				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																		
							AGED HEAVY METALS-EILs						EILs		ESLs							
				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05
Ambient Background Concentration (ABC) [2]				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH1	0-0.1	Topsoil: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH2	0-0.3	Topsoil: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH3	0-0.45	Sandy silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH4	0-0.5	Silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH5	0-0.2	Fill: clayey gravel	Coarse	7.6	33	11	100	413	248	1263	425	1322	170	180	180	120	300	2800	50	85	70	105	33
BH5	1.3-1.5	Silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH6	0-0.2	Fill: gravelly clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH6	0.5-0.95	Silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH7	0.5-0.6	Silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH8	0.1-0.3	Sandy silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH9	0-0.2	Topsoil: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH10	0-0.2	Sandy silt	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH11	0-0.2	Sandy silt	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH12	0-0.2	Sandy silt	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH13	0-0.2	Sandy clayey silt	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33
BH14	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	33

EIS

TABLE D
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful [2]	Total Scheduled[3]		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	250	0.2	0.5	1	3	100
General Solid Waste CT1 [1]			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	<50	<50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1 [1]			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	<50	<50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2 [1]			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	<50	<50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2 [1]			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	<50	<50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH1	0-0.1	Topsoil: silty clay	LPQL	LPQL	23	8	8	LPQL	8	16	0.53	0.09	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH2	0-0.3	Topsoil: silty clay	LPQL	LPQL	23	9	20	LPQL	8	26	0.4	0.07	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	84	LPQL	110	194	LPQL	LPQL	LPQL	LPQL	LPQL
BH3	0-0.45	Sandy silty clay	4	LPQL	23	8	9	LPQL	7	30	0.54	0.08	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH4	0-0.5	Silty clay	LPQL	LPQL	21	16	10	0.2	6	32	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	0-0.2	Fill: clayey gravel	LPQL	LPQL	43	30	9	LPQL	**73**	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	1.3-1.5	Silty clay	LPQL	LPQL	17	6	6	LPQL	7	9	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH6	0-0.2	Fill: gravelly clay	LPQL	LPQL	28	9	11	LPQL	9	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH6	0.5-0.95	Silty clay	LPQL	LPQL	21	5	6	LPQL	6	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH7	0.5-0.6	Silty clay	LPQL	LPQL	21	7	7	LPQL	9	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH8	0.1-0.3	Silty clay	LPQL	LPQL	20	10	27	LPQL	9	42	0.6	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	110	110	LPQL	LPQL	LPQL	LPQL	LPQL
BH9	0-0.2	Topsoil: silty clay	LPQL	LPQL	16	6	10	LPQL	6	20	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH10	0-0.2	Sandy silt	LPQL	LPQL	19	5	12	LPQL	6	15	1.7	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH11	0-0.2	Sandy silt	LPQL	LPQL	19	7	19	LPQL	7	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH12	0-0.2	Sandy silt	LPQL	LPQL	20	7	12	LPQL	7	22	0.3	0.05	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH13	0-0.2	Sandy clayey silt	LPQL	LPQL	21	10	17	LPQL	9	44	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH14	0-0.2	Fill: silty clay	LPQL	LPQL	23	13	14	LPQL	14	50	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
Total Number of samples			16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14
Maximum Value			4	LPQL	43	30	27	0.2	73	50	1.7	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	84	LPQL	110	194	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

[1] - NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014)

[2] - Assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion

[3] - Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde

Concentration above the CT1 **VALUE**
Concentration above SCC1 **VALUE**
Concentration above the SCC2 **VALUE**

Abbreviations:

PAHs: Polycyclic Aromatic Hydrocarbons
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
PID: Photoionisation Detector
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
NA: Not Analysed
NC: Not Calculated
NSL: No Set Limit
SAC: Site Assessment Criteria
TRH: Total Recoverable Hydrocarbons
CT: Contaminant Threshold
SCC: Specific Contaminant Concentration
HILs: Health Investigation Levels
NEPM: National Environmental Protection Measure
BTEX: Monocyclic Aromatic Hydrocarbons

TABLE E

SOIL LABORATORY TCLP RESULTS

All data in mg/L unless stated otherwise

			Nickel
PQL - Envirolab Services			0.02
TCLP1 - General Solid Waste [1]			2
TCLP2 - Restricted Solid Waste [1]			8
TCLP3 - Hazardous Waste [1]			>8
Sample Reference	**Sample Depth**	**Sample Description**	
BH5	0-0.2	Fill: clayey gravel	LPQL
Total Number of samples			1
Maximum Value			LPQL

Explanation:

1 - NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014)

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**

Abbreviations:

PQL: Practical Quantitation Limit

LPQL: Less than PQL

B(a)P: Benzo(a)pyrene

NC: Not Calculated

NA: Not Analysed

TCLP: Toxicity Characteristics Leaching Procedure

TABLE F
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH10 (0-0.2m)	Arsenic	4	LPQL	LPQL	NC	NC
Dup Ref = Dup 1	Cadmium	0.4	LPQL	LPQL	NC	NC
	Chromium	1	19	20	19.5	5
Envirolab Report: 179648	Copper	1	5	5	5.0	0
	Lead	1	12	11	11.5	9
	Mercury	0.1	LPQL	LPQL	NC	NC
	Nickel	1	6	6	6.0	0
	Zinc	1	15	16	15.5	6
	Naphthalene	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	LPQL	LPQL	NC	NC
	Acenaphthene	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	0.1	0.2	0.2	67
	Anthracene	0.1	LPQL	LPQL	NC	NC
	Fluoranthene	0.1	0.3	0.5	0.4	50
	Pyrene	0.1	0.4	0.8	0.6	67
	Benzo(a)anthracene	0.1	0.1	0.3	0.2	100
	Chrysene	0.1	0.1	0.4	0.3	120
	Benzo(b,j+k)fluoranthene	0.2	0.3	0.5	0.4	50
	Benzo(a)pyrene	0.05	0.2	0.3	0.3	40
	Indeno(123-cd)pyrene	0.1	0.1	0.2	0.2	67
	Dibenzo(ah)anthracene	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	0.2	0.3	0.3	40
	Total OCPs	0.1	LPQL	LPQL	NC	NC
	Total OPPs	0.1	LPQL	LPQL	NC	NC
	Total PCBs	0.1	LPQL	LPQL	NC	NC
	TRH C_6-C_{10} (F1)	25	LPQL	LPQL	NC	NC
	TRH >C_{10}-C_{16} (F2)	50	LPQL	LPQL	NC	NC
	TRH >C_{16}-C_{34} (F3)	100	LPQL	LPQL	NC	NC
	TRH >C_{34}-C_{40} (F4)	100	LPQL	LPQL	NC	NC
	Benzene	0.5	LPQL	LPQL	NC	NC
	Toluene	0.5	LPQL	LPQL	NC	NC
	Ethylbenzene	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	LPQL	LPQL	NC	NC
	o-xylene	1	LPQL	LPQL	NC	NC

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable
Results between 5 & 10 times PQL = RPD value <= 75% are acceptable
Results < 5 times PQL = RPD value <= 100% are acceptable

If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria VALUE

Abbreviations:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
NA: Not Analysed
NC: Not Calculated
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCBs: Polychlorinated Biphenyls
TRH: Total Recoverable Hydrocarbons

TABLE G

SUMMARY OF FIELD QA/QC RESULTS

ANALYSIS	Envirolab PQL		TB1[S]
			7/11/2017
	mg/kg	µg/L	mg/kg
Benzene	1	1	LPQL
Toluene	1	1	LPQL
Ethylbenzene	1	1	LPQL
m+p-xylene	2	2	LPQL
o-xylene	1	1	LPQL

Explanation:

[W] Sample type (water)

[S] Sample type (sand)

BTEX concentrations in trip spikes are presented as % recovery

Values above PQLs/Acceptance criteria **VALUE**

Abbreviations:

PQL: Practical Quantitation Limit

LPQL: Less than PQL

NA: Not Analysed

NC: Not Calculated

TB: Trip Blank

Appendix D: Borehole Logs

JKGeotechnics

BOREHOLE LOG

Borehole No. 201

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 136.8 m

Date: 15/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING										FILL: Silty clay, low to medium plasticity, red brown, trace of fine to coarse grained sub-angular igneous gravel and root fibres.	w<PL			GRASS COVER
					N = 20 7,8,12	136	1		CL	Silty CLAY: low plasticity, red brown.	w<PL	Hd	>600 >600 >600	RESIDUAL
					N = 43 21,18,25	135	2		-	Extremely Weathered siltstone: clayey SILT, low plasticity, grey and light red brown.	XW	Hd		TOO FRIABLE FOR HP TESTING
										SILTSTONE: grey.	DW	M		MELBERGEN SANDSTONE HIGH 'TC' BIT RESISTANCE
						134 133 132 131 130	3 4 5 6			REFER TO CORED BOREHOLE LOG				

JKGeotechnics

CORED BOREHOLE LOG

Borehole No. 201

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Core Size:** NMLC **R.L. Surface:** 136.8 m

Date: 15/10/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** K.K.S./A.B.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					START CORING AT 2.62m						
0% RETURN		134	3		SILTSTONE: grey, bedded sub horizontally.	SW	H - VH	0.40		(2.76m) J, 60°, P, R, Cn	Melbergen Sandstone
					NO CORE 0.34m					(3.46m) J, 65°, Un, R, Cn	
		133			SILTSTONE: grey, bedded sub horizontally.	HW	VL				
					NO CORE 0.36m						
			4		SILTSTONE: grey, with ironstone bands, bedded sub horizontally.	MW	H	1.1		(4.00m) XWS, 0°, 60 mm.t (4.13m) J, 65°, Un, R, Cn (4.26m) J, 65°, Un, R, Cn (4.34m) XWS, 0°, 120 mm.t	
					SANDSTONE: fine grained, red brown, bedded sub horizontally.	SW					
					NO CORE 0.21m						
50% RETURN		132	5		Interbedded SILTSTONE: light grey, & SANDSTONE: fine grained, light red brown.	SW	H	2.2		(4.73m) XWS, 0°, 20 mm.t (4.81m) XWS, 0°, 15 mm.t (4.86m) XWS, 0°, 20 mm.t	Melbergen Sandstone
					SANDSTONE: fine grained, red brown and light red brown, bedded sub horizontally.		H - VH	0.40 4.4 3.2	600 200 60 20	(5.18m) Be, 10°, P, R, Fe Sn (5.63m) Be, 0°, P, R, Fe Sn (5.77m) Be, 0°, P, R, Fe Sn (6.33m) Be, 0°, Un, R, Cn	
		131	6								
		130	7		END OF BOREHOLE AT 6.48 m						
		129	8								
		128									

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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BOREHOLE LOG

Borehole No. 202

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 137.1 m

Date: 15/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING						137				FILL: Silty clay, low to medium plasticity, red brown, trace of fine to coarse grained sub-angular igneous gravel, and root fibres.	w<PL			GRASS COVER
					N = 21 9,11,10	136	1		CL	Silty CLAY: low plasticity, red brown.	w<PL	Hd	>600 >600 >600	RESIDUAL
					N = 31 7,12,19	135	2		-	Extremely Weathered siltstone: silty CLAY, low plasticity, grey.	XW	Hd		MELBERGEN SANDSTONE
									-	SANDSTONE: fine to medium grained, light red brown.	DW	H		VERY HIGH 'TC' BIT RESISTANCE
						134	3			REFER TO CORED BOREHOLE LOG				
						133	4							
						132	5							
						131	6							

JKGeotechnics

CORED BOREHOLE LOG

Borehole No. 202 **2 / 2**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Core Size:** NMLC **R.L. Surface:** 137.1 m

Date: 15/10/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** K.K.S./A.B.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
		135			START CORING AT 2.70m						
50% RETURN		134	3		SANDSTONE: fine grained, light red brown, bedded sub horizontally.	SW	H	3.4		(2.96m) Be, 0°, P, R, Cn	Melbergen Sandstone
					Interbedded SILTSTONE and SANDSTONE: grey, bedded sub horizontally.	MW	M	0.30		(3.12m) XWS, 0°, 20 mm.t (3.19m) Be, 0°, Un, R, Cn (3.25m) J, 42°, Un, R, Cn	
					SANDSTONE: fine grained, red brown, bedded sub horizontally.	SW	H	2.9		(3.46m) J, 85°, P, R, Cn (3.58m) J, 55°, St, R, Cn (3.65m) XWS, 0°, 30 mm.t (3.73m) Be, 0°, Un, R, Cn (3.77m) XWS, 0°, 10 mm.t (3.80m) XWS, 0°, 90 mm.t	
		133	4		Interbedded SILTSTONE: grey, & SANDSTONE: fine grained, orange brown and red brown.	HW	L	0.40			
					SILTSTONE: red brown and grey, bedded sub horizontally.	XW	Hd				
					Extremely Weathered siltstone: silty CLAY, low plasticity, grey.						
					NO CORE 0.44m						
0% RETURN		132	5		SILTSTONE: grey.	HW	VL - L	0.50		(4.90m) XWS, 0°, 120 mm.t (5.05m) XWS, 0°, 30 mm.t (5.17m) XWS, 0°, 10 mm.t (5.31m) XWS, 0°, 10 mm.t	Melbergen Sandstone
					Extremely Weathered siltstone: silty CLAY, low plasticity, grey and red brown.	XW	Hd				
		131	6		SANDSTONE: fine grained, red brown and grey, bedded at 0-15°.	MW	L - M	0.30		(5.78m) CS, 0°,5 mm.t (5.83m) Be, 0°, Un, R, Cn, 5 mm.t (5.87m) XWS, 0°, 15 mm.t (5.95m) J, 85°, P, R, Cn	
							M - H	0.50			
								0.50		(6.21m) Be, 0°, P, R, Fe Sn	
		130	7		END OF BOREHOLE AT 6.80 m						
		129	8								

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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BOREHOLE LOG

Borehole No. 203 1 / 2

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 137.6 m

Date: 15/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING										FILL: Silty gravel, fine to coarse grained, grey brown, sub-angular igneous gravel.	D			GRAVEL COVER
									CL	Silty CLAY: low plasticity, red brown.	w<PL	Hd		RESIDUAL
					N = 39 10,19,20	137	1						>600 >600 >600	
									-	Extremely Weathered siltstone: silty CLAY, low plasticity, red brown and grey, with iron indurated bands.	XW	Hd		MELBERGEN SANDSTONE
						136	2			SILTSTONE: grey.	DW	M - H		HIGH 'TC' BIT RESISTSNCE
						135				REFER TO CORED BOREHOLE LOG				
						134	3							
							4							
						133	5							
						132	6							
						131								

JK 9.02.4 LIB:GLB Log JK AUGERHOLE - MASTER 30991L2 GRIFFITH.GPJ <<DrawingFile>> 14/11/2019 16:51 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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CORED BOREHOLE LOG

Borehole No. 203 **2 / 2**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Core Size:** NMLC **R.L. Surface:** 137.6 m

Date: 15/10/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** K.K.S./A.B.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ (VL -0.1, L -0.3, M -1, H -3, VH -10, EH)	DEFECT DETAILS: SPACING (mm) (600, 200, 60, 20)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
		135			START CORING AT 2.65m						
100% RETURN		134	3		SANDSTONE: fine grained, red brown and grey, with occasional cross bedding, bedded sub horizontally.	MW	M - H	3.1, 3.2, 4.5		(2.71m) Be, 0°, P, R, SAND INFILL (3.05m) J, 30°, P, R, Cn	Melbergen Sandstone
		133	4		Interbedded SANDSTONE and SILTSTONE: silty CLAY, low plasticity, grey, with bands of slightly weathered medium strength siltstone and sandstone.	HW	M	0.80		(3.81-4.82m) FRACTURED ZONE	
		132	5		SANDSTONE: fine grained, light red brown and orange brown, bedded sub horizontally.	SW	H	5.3, 3.0, 3.0, 5.0		(5.00m) XWS, 0°, 120 mm.t (5.20m) J, 75°, Un, R, Cn (5.82m) J, 5°, P, R, Fe Sn (6.12m) J, 60°, P, R, Fe Sn (6.52m) Be, 0°, P, R, Cn	
		131	6		Extremely weathered siltstone, silty CLAY, low plasticity, red brown and grey.	XW	Hd				
		130	7		END OF BOREHOLE AT 6.70 m						
		129	8								

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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BOREHOLE LOG

Borehole No. 204

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 137.9 m

Date: 16/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■									FILL: Silty gravel, fine to coarse grained, brown, sub-angular igneous gravel.	D			
	■								CL	Silty CLAY: low plasticity, red brown.	w<PL	Hd		RESIDUAL
				■	N > 16 8,8,8/ 50mm REFUSAL					as above, but orange brown and red brown.			600 580 60	
						137	1			END OF BOREHOLE AT 0.90 m				
						136	2							
						135	3							
						134	4							
						133	5							
						132	6							
						131								

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BOREHOLE LOG

Borehole No. 205

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 138.9 m

Date: 16/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING	■									FILL: Silty gravel, fine to coarse grained, brown, sub-angular igneous gravel.	M			GRAVEL COVER
									CL	Silty CLAY: low plasticity, red brown.	w<PL	Hd		RESIDUAL
					N = 33 12,20,13									NO SAMPLE RETURN IN SPT
				■		138	1		-	Extremely Weathered siltstone: silty CLAY, low plasticity, grey.	XW	Hd		MELBERGEN SANDSTONE
										SILTSTONE: grey.	DW	H		VERY HIGH 'TC' BIT RESISTANCE
						137	2					L - M		LOW RESISTANCE WITH HIGH TO MODERATE BANDS
														MODERATE RESISTANCE WITH LOW BANDS
										REFER TO CORED BOREHOLE LOG				
						136	3							
						135	4							
						134	5							
						133	6							
						132								

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CORED BOREHOLE LOG

Borehole No. 205 **2 / 2**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Core Size:** NMLC **R.L. Surface:** 138.9 m

Date: 16/10/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** K.K.S./A.B.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					START CORING AT 2.63m						
75% RETURN		136	3		SILTSTONE: grey brown, bedded sub horizontally.	SW	M - H	0.90		(2.67m) J, 80°, P, R, Cn	Melbergen Sandstone
					as above, but light red brown.					(3.10m) J, 85°, P, R, Cn	
					SANDSTONE: fine grained, light red brown, bedded sub horizontally.			2.1			
		135	4		Interbedded SILTSTONE: grey, & SANDSTONE: fine grained, light red brown, bedded sub horizontally.	MW / SW	M / H	0.50 / 2.4		(3.56m) J, 85°, Un, R, Cn (3.63m) Be, 0°, Un, R, Cn (3.68m) J, 31°, C, R, Cn (3.73m) Be, 0°, Un, R, Cn (3.87m) XWS, 0°, 20 mm.t	
					SANDSTONE: fine grained, light red brown, bedded sub horizontally.					(4.25m) J, 85°, P, R, Cn	
		134	5		SILTSTONE: orange brown and grey, bedded at sub horizontally.	HW	M - H	0.20		(4.56m) Be, 70°, P, R, Fe Sn (4.60m) XWS, 0°, 90 mm.t (4.69m) CS, 0°, 40 mm.t (4.90m) XWS, 0°, 100 mm.t	
					NO CORE 0.27m						Melbergen Sandstone
					SILTSTONE: grey brown, bedded sub horizontally.	MW	L	0.20	60 20	(5.49m) J, 22°, Un, S, Cn (5.55m) J, 22°, Un, S, Cn	
		133	6		END OF BOREHOLE AT 5.63 m						
		132	7								
		131	8								
		130									

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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BOREHOLE LOG

Borehole No. 206

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 139.2 m

Date: 16/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■					139				FILL: Silty clay, medium to high plasticity, brown, trace of fine to medium grained igneous and sandstone gravel.	w<PL			GRASS COVER
				■	N=SPT 11/ 100mm REFUSAL	138	1		CL-Cl	Silty CLAY: low to medium plasticity, orange brown.	w~PL	VSt	270 250 250	RESIDUAL
						137	2			END OF BOREHOLE AT 1.50 m				
						136	3							
						135	4							
						134	5							
						133	6							

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BOREHOLE LOG

Borehole No. 207

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 140.1 m

Date: 16/10/16 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING	■					140				FILL: Silty gravel, fine to coarse grained, grey brown, with sub-angular igneous gravel.	D			
									CL		w~PL	Hd		RESIDUAL
									-	Silty CLAY: low plasticity, red brown.	SW	H		MELBERGEN SANDSTONE
				■						SILTSTONE: grey, with iron indurated bands.				VERY HIGH 'TC' BIT RESISTANCE WITH LOW BANDS
						139	1			REFER TO CORED BOREHOLE LOG				
						138	2							
						137	3							
						136	4							
						135	5							
						134	6							

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CORED BOREHOLE LOG

Borehole No. 207 **2 / 2**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Core Size:** NMLC **R.L. Surface:** 140.1 m

Date: 16/10/16 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** K.K.S./A.B.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
		140									
			1		START CORING AT 1.08m						
75% RETURN		139			SANDSTONE: fine grained, light red brown, bedded at 0-10°.	SW	VH	5.3		(1.32m) XWS, 0°, 50 mm.t (1.51m) Be, 0°, Un, R, Cn	Melbergen Sandstone
			2		NO CORE 0.05m SANDSTONE: fine grained, light red brown, bedded at 0-10°.	SW	VH	4.3 7.0		(1.82m) XWS, 0°, 50 mm.t	
10% RETURN		138			as above, but red brown and grey.			4.6			Melbergen Sandstone
		137	3					4.5	600 200 60 20	(3.48m) Be, 2°, P, R, Cn	
		136	4		SANDSTONE: fine to medium grained, grey, with occasional dark grey bands.			4.6		(4.16m) XWS, 0°, 20 mm.t (4.45m) Be, 0°, P, R, Cn (4.52m) J, 58°, C, R, Cn (4.61m) XWS, 0°, St	
					END OF BOREHOLE AT 4.80 m						
		135	5								
		134	6								

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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BOREHOLE LOG

Borehole No. 208

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 140.5 m

Date: 16/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■								-	CONCRETE: 30mm.t	M			NO OBSERVED REINFORCEMENT
										FILL: Silty gravel, fine to coarse grained, brown, with sub-angular igneous gravel.				ROADBASE
	■								CL	Silty CLAY: low plasticity, red brown.	w<PL	Hd		RESIDUAL
				■	N > 10 9,10/ 50mm REFUSAL	140							>600 >600	
										END OF BOREHOLE AT 0.70 m			>600	REFUSAL ON SANDSTONE BEDROCK
						139	1							
						138	2							
						137	3							
						136	4							
						135	5							
						134	6							

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BOREHOLE LOG

Borehole No.
209
1 / 2

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 140.9 m

Date: 17/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING						140	1		-	FILL: Clayey silt, low plasticity, red brown, trace of fine to medium grained sub-angular igneous gravel, and root fibres.	w<PL			GRASS COVER
											DW	H		MELBERGEN SANDSTONE
										SILTSTONE: grey.				HIGH 'TC' BIT RESISTSANCE
										REFER TO CORED BOREHOLE LOG				
						139	2							
						138	3							
						137	4							
						136	5							
						135	6							
						134								

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CORED BOREHOLE LOG

Borehole No. 209 **2 / 2**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Core Size:** NMLC **R.L. Surface:** 140.9 m

Date: 17/10/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** K.K.S./A.B.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					START CORING AT 1.15m						
75% RETURN		139	2		SANDSTONE: fine to medium grained, red brown, bedded sub horizontally.	SW	H	1.1			Melbergen Sandstone
					NO CORE 0.49m						
					Extremely Weathered siltstone: clayey sandy SILT, low plasticity, red brown, fine grained sand.	XW	Hd				
					Extremely Weathered siltstone: clayey SILT, low plasticity, grey.						
					NO CORE 0.59m						
50% RETURN		138	3		Extremely Weathered siltstone: clayey SILT, low plasticity, grey.	XW	Hd				Melbergen Sandstone
		137	4		SILTSTONE: grey, bedded sub horizontally, with sandstone, fine grained, red brown.	MW	M	0.20 0.30 0.40	600 200 60 20	(3.28m) XWS, 0°, 50 mm.t (3.38m) XWS, 0°, 10 mm.t (3.48m) XWS, 0°, 20 mm.t (3.58m) J, 80°, P, R, Cn (3.89m) J, 6°, Un, R, Fe Sn (3.94m) XWS, 0°, 10 mm.t (4.24m) XWS, 10°, 150 mm.t	
		136	5		SANDSTONE: fine grained, red brown and grey, bedded sub horizontally.	HW SW	L H	1.0 0.60	600 200 60 20	(4.53m) Be, 0°, Un, R, Cn (4.72m) Be, 0°, Un, R, Cn (4.86m) XWS, 0°, 5 mm.t (4.87m) XWS, 0°, 20 mm.t (4.95m) XWS, 0°, 50 mm.t	
		135	6					2.8		(5.74m) XWS, 0°, 15 mm.t (5.79m) Be, 0°, Un, R, Fe Sn	
					END OF BOREHOLE AT 6.09 m						
		134	7								
		133									

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

JKGeotechnics

BOREHOLE LOG

Borehole No. 210
1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 141.2 m

Date: 17/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION						141			ML	Clayey SILT: low plasticity, red brown, trace of root fibres.	M			GRASS COVER EROSIONAL
									-	as above, but without root fibres.	DW	H		MELBERGEN SANDSTONE
										SILTSTONE: grey.				HIGH 'TC' BIT RESISTANCE
										END OF BOREHOLE AT 0.60 m				
						140	1							
						139	2							
						138	3							
						137	4							
						136	5							
						135	6							

JKGeotechnics

BOREHOLE LOG

Borehole No. 211
1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 141.3 m

Date: 17/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■					141			ML	Clayey SILT: low plasticity, red brown, trace of root fibres.	w<PL	Hd		GRASS COVER
	■									as above, but without root fibres.				EROSIONAL
				■	N = 21 11,13,8					Clayey SILT: low plasticity, red brown, with iron indurated bands.				
						140	1			END OF BOREHOLE AT 0.95 m				
						139	2							
						138	3							
						137	4							
						136	5							
						135	6							

JKGeotechnics

BOREHOLE LOG

Borehole No. 212

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 141.0 m

Date: 17/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■									FILL: Silty clay, low plasticity, red brown, trace of fine to medium grained sub-angular igneous gravel, and root fibres.	w<PL			GRASS COVER
									ML		w<PL	Hd		EROSIONAL
				■	N = 23 6,10,13					Clayey SILT: low plasticity, red brown.				
						140	1			END OF BOREHOLE AT 0.95 m				
						139	2							
						138	3							
						137	4							
						136	5							
						135	6							

JKGeotechnics

BOREHOLE LOG

Borehole No. 213

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 140.8 m

Date: 17/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■									FILL: Silty gravel, fine to coarse grained, grey brown, with sub-angular igneous gravel.	M			
									ML		w<PL	(VSt)		EROSIONAL
				■	N > 14 3,6,8/ 50mm REFUSAL					Clayey SILT: low plasticity, red brown.				TOO FRIABLE FOR HP TESTING
						140			-	Extremely Weathered siltstone: silty CLAY, low plasticity, grey.	XW	Hd		MELBERGEN SANDSTONE
							1			END OF BOREHOLE AT 0.85 m				
						139	2							
						138	3							
						137	4							
						136	5							
						135	6							
						134								

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BOREHOLE LOG

Borehole No. 214

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 140.4 m

Date: 16/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■									FILL: Silty gravel, fine to coarse grained, grey brown, with sub-angular igneous gravel.	M			
	■					140			ML	Clayey SILT: low plasticity, red brown.	w<PL	Hd		EROSIONAL
				■	N = 23 11,11,12									
							1			END OF BOREHOLE AT 0.95 m				
						139								
							2							
						138								
							3							
						137								
							4							
						136								
							5							
						135								
							6							
						134								

JKGeotechnics

BOREHOLE LOG

Borehole No. 215

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 139.2 m

Date: 16/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■					139				FILL: Silty clay, medium plasticity, brown, trace of fine to medium grained igneous gravel and root fibres.	w<PL			GRASS COVER 0-0.5m HAND AUGER DOWN TO SERVICES
				■					CL	Silty CLAY: low plasticity, red brown.				RESIDUAL
									-	SILTSTONE: grey. END OF BOREHOLE AT 0.70 m	DW	M		MELBERGEN SANDSTONE MODERATE 'TC' BIT RESISTANCE
						138	1							
						137	2							
						136	3							
						135	4							
						134	5							
						133	6							

JKGeotechnics

BOREHOLE LOG

Borehole No. 216

1 / 1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 139 m

Date: 17/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■									FILL: Silty clay, low to medium plasticity, red brown, trace of fine to medium grained sub-angular igneous gravel.	w<PL			
	■				N = 15 5,8,7				ML	Clayey SILT: low plasticity, red brown.	w<PL	Hd		EROSIONAL
				■		138	1			END OF BOREHOLE AT 0.95 m				
						137	2							
						136	3							
						135	4							
						134	5							
						133	6							

JKGeotechnics

BOREHOLE LOG

Borehole No. 217

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Method:** SPIRAL AUGER **R.L. Surface:** 140.3 m

Date: 17/10/19 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** K.K.S./A.B.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING	■					140				FILL: Silty clay, fine to medium plasticity, red brown, fine to medium grained sub-angular igneous gravel, and root fibres.	w<PL			GRASS COVER
	■								CL	Silty CLAY: low plasticity, red brown.	w<PL	F		RESIDUAL TOO FRIABLE FOR HP TESTING
				■	N = 3 1,1,2		1							
						139			-	SANDSTONE: light red brown.	DW	H		MELBERGEN SANDSTONE HIGH 'TC' BIT RESISTANCE
				■		138	2					L - M		MODERATE RESISTANCE WITH VERY LOW BANDS
										REFER TO CORED BOREHOLE LOG				
						137	3							
						136	4							
						135	5							
						134	6							

JKGeotechnics

CORED BOREHOLE LOG

Borehole No. 217 **2 / 2**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: GRIFFITH REGIONAL HEALTH SERVICE - NOOREBAR AVENUE, GRIFFITH, NSW

Job No.: 30991L2 **Core Size:** NMLC **R.L. Surface:** 140.3 m

Date: 17/10/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** K.K.S./A.B.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS SPACING (mm)	DEFECT DETAILS DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
		138			START CORING AT 2.70m						
75% RETURN ON COMPLETION OF CORING		137	3		SANDSTONE: fine grained, light red brown, bedded sub horizontally.	MW	H	2.1, 1.5		(3.21m) J, 85°, Un, R, Cn (3.30m) XWS, 0°, 70 mm.t	Melbergen Sandstone
		136	4		as above, but with siltstone laminae.	SW	H - VH	1.9, 2.6, 2.8, 1.8		(3.48m) J, 8°, Un, R, Cn (3.75m) J, 80°, Un, R, Cn (4.82m) J, 75 - 85°, Un, R, Cn	
		135	5		END OF BOREHOLE AT 5.33 m						
		134	6								
		133	7								
		132	8								

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

Appendix E: Laboratory Reports & COC Documents

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12 Ashley St Chatswood NSW 2067
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CERTIFICATE OF ANALYSIS 228853

Client Details

Client	JK Geotechnics
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E30991BT, Griffith**
Number of Samples	44 Soil
Date samples received	21/10/2019
Date completed instructions received	21/10/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	28/10/2019
Date of Issue	30/10/2019
Reissue Details	This report replaces R00 created on 28/10/2019 due to: revised report with additional results.

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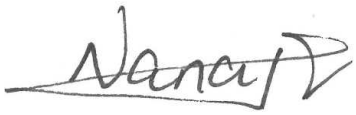
Asbestos Approved By
Analysed by Asbestos Approved Identifier: Panika Wongchanda
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Chemist
Lucy Zhu, Senior Asbestos Analyst
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	77	79	73	83	77

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	74	77	73	84	79

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	87	89	88	83	78

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		228853-35	228853-37	228853-39	228853-43
Your Reference	UNITS	BH216	BH217	DUP1	TB1KS
Depth		0.1-0.3	0.1-0.3	-	-
Date Sampled		17/10/2019	17/10/2019	15/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	[NA]
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	[NA]
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<3	<3	<3	[NA]
Surrogate aaa-Trifluorotoluene	%	85	75	77	80

svTRH (C10-C40) in Soil						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	87	102	81	81	81

svTRH (C10-C40) in Soil						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	62	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	150	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	89	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	89	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	170	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	120	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	120	260	<50
Surrogate o-Terphenyl	%	82	82	93	87	81

svTRH (C10-C40) in Soil						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	79	81	79	79	80

svTRH (C10-C40) in Soil				
Our Reference		228853-35	228853-37	228853-39
Your Reference	UNITS	BH216	BH217	DUP1
Depth		0.1-0.3	0.1-0.3	-
Date Sampled		17/10/2019	17/10/2019	15/10/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	100	<50
Surrogate o-Terphenyl	%	81	88	80

PAHs in Soil						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.08	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	0.68	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	97	96	101	101	104

PAHs in Soil						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	102	97	96	102

PAHs in Soil						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	94	98	109	97	104

PAHs in Soil				
Our Reference		228853-35	228853-37	228853-39
Your Reference	UNITS	BH216	BH217	DUP1
Depth		0.1-0.3	0.1-0.3	-
Date Sampled		17/10/2019	17/10/2019	15/10/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	104	100	94

Organochlorine Pesticides in soil						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	74	76	80	86	86

Organochlorine Pesticides in soil						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	84	84	86	91	83

Organochlorine Pesticides in soil						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	78	84	91	74	78

Organochlorine Pesticides in soil			
Our Reference		228853-35	228853-37
Your Reference	UNITS	BH216	BH217
Depth		0.1-0.3	0.1-0.3
Date Sampled		17/10/2019	17/10/2019
Type of sample		Soil	Soil
Date extracted	-	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	80	85

Organophosphorus Pesticides in Soil						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	74	76	80	86	86

Organophosphorus Pesticides in Soil						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	84	84	86	91	83

Organophosphorus Pesticides in Soil						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	78	84	91	74	78

Organophosphorus Pesticides in Soil			
Our Reference		228853-35	228853-37
Your Reference	UNITS	BH216	BH217
Depth		0.1-0.3	0.1-0.3
Date Sampled		17/10/2019	17/10/2019
Type of sample		Soil	Soil
Date extracted	-	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	80	85

PCBs in Soil						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	74	76	80	86	86

PCBs in Soil						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	84	84	86	91	83

PCBs in Soil						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	78	84	91	74	78

PCBs in Soil			
Our Reference		228853-35	228853-37
Your Reference	UNITS	BH216	BH217
Depth		0.1-0.3	0.1-0.3
Date Sampled		17/10/2019	17/10/2019
Type of sample		Soil	Soil
Date extracted	-	23/10/2019	23/10/2019
Date analysed	-	23/10/2019	23/10/2019
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	80	85

Acid Extractable metals in soil						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
Arsenic	mg/kg	<4	<4	<4	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	20	15	25	16
Copper	mg/kg	6	6	10	33	4
Lead	mg/kg	6	9	11	21	5
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	7	10	8	6
Zinc	mg/kg	21	12	18	42	8

Acid Extractable metals in soil						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	25	41	68	44	17
Copper	mg/kg	8	27	38	11	3
Lead	mg/kg	8	14	6	9	5
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	70	170	32	4
Zinc	mg/kg	16	48	43	25	71

Acid Extractable metals in soil						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	20	43	30	17
Copper	mg/kg	3	7	17	18	7
Lead	mg/kg	4	8	60	14	5
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	11	44	43	19
Zinc	mg/kg	7	20	79	31	12

Acid Extractable metals in soil				
Our Reference		228853-35	228853-37	228853-39
Your Reference	UNITS	BH216	BH217	DUP1
Depth		0.1-0.3	0.1-0.3	-
Date Sampled		17/10/2019	17/10/2019	15/10/2019
Type of sample		Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	62	16	17
Copper	mg/kg	28	7	6
Lead	mg/kg	44	7	6
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	110	8	10
Zinc	mg/kg	43	30	9

Moisture						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
Moisture	%	10	18	3.1	4.5	3.3

Moisture						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
Moisture	%	28	4.8	9.2	19	19

Moisture						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019
Moisture	%	7.2	8.9	8.6	13	12

Moisture				
Our Reference		228853-35	228853-37	228853-39
Your Reference	UNITS	BH216	BH217	DUP1
Depth		0.1-0.3	0.1-0.3	-
Date Sampled		17/10/2019	17/10/2019	15/10/2019
Type of sample		Soil	Soil	Soil
Date prepared	-	23/10/2019	23/10/2019	23/10/2019
Date analysed	-	24/10/2019	24/10/2019	24/10/2019
Moisture	%	27	13	20

Asbestos ID - soils						
Our Reference		228853-1	228853-4	228853-6	228853-8	228853-11
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		15/10/2019	15/10/2019	15/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	25/10/2019	25/10/2019	25/10/2019	25/10/2019	25/10/2019
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 50g	Approx. 40g	Approx. 40g
Sample Description	-	Red clayey soil & rocks	Red clayey soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		228853-13	228853-16	228853-18	228853-20	228853-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0.1-0.2	0.05-0.1	0.1-0.2	0.1-0.2	0.05-0.1
Date Sampled		16/10/2019	16/10/2019	16/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	25/10/2019	25/10/2019	25/10/2019	25/10/2019	25/10/2019
Sample mass tested	g	Approx. 35g	Approx. 60g	Approx. 50g	Approx. 30g	Approx. 25g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		228853-24	228853-26	228853-29	228853-31	228853-33
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		17/10/2019	17/10/2019	17/10/2019	16/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	25/10/2019	25/10/2019	25/10/2019	25/10/2019	25/10/2019
Sample mass tested	g	Approx. 40g	Approx. 40g	Approx. 50g	Approx. 45g	Approx. 50g
Sample Description	-	Red sandy soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils			
Our Reference		228853-35	228853-37
Your Reference	UNITS	BH216	BH217
Depth		0.1-0.3	0.1-0.3
Date Sampled		17/10/2019	17/10/2019
Type of sample		Soil	Soil
Date analysed	-	25/10/2019	25/10/2019
Sample mass tested	g	Approx. 40g	Approx. 35g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
AT-008	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS.
Org-012/017	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS and/or GC-MS/MS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	228853-4
Date extracted	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Date analysed	-			24/10/2019	1	24/10/2019	24/10/2019		24/10/2019	24/10/2019
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	90	75
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	90	75
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	102	87
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	87	74
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	85	71
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	87	71
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	85	70
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	80	1	77	77	0	83	71

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Date analysed	-			[NT]	24	24/10/2019	24/10/2019		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	24	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	24	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	24	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	24	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	24	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	24	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	24	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	24	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	24	87	81	7	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	228853-4
Date extracted	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Date analysed	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	116	110
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	102	95
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	122	121
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	116	110
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	102	95
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	122	121
Surrogate o-Terphenyl	%		Org-003	87	1	87	89	2	94	90

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Date analysed	-			[NT]	24	23/10/2019	24/10/2019		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	24	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	24	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	24	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	24	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	24	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	24	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	24	79	78	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	228853-4
Date extracted	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Date analysed	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Naphthalene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	106	106
Acenaphthylene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	96	86
Phenanthrene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	96	90
Anthracene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	84	77
Pyrene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	96	87
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	100	98
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	<0.05	1	<0.05	<0.05	0	98	95
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	103	1	97	100	3	81	85

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Date analysed	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	24	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	24	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	24	94	104	10	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	228853-4
Date extracted	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Date analysed	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
alpha-BHC	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	74	68
HCB	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	84	76
gamma-BHC	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	86	82
delta-BHC	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	92	84
Heptachlor Epoxide	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	84	80
gamma-Chlordane	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	92	84
Dieldrin	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	106	96
Endrin	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	98	100
Endosulfan II	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	90	82
Endrin Aldehyde	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	96	92
Methoxychlor	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	84	1	74	84	13	74	84

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Date analysed	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	[NT]	24	78	80	3	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	228853-4
Date extracted	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Date analysed	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Dichlorvos	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	128	120
Dimethoate	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	98	94
Fenitrothion	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	100	104
Malathion	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	104	118
Chlorpyriphos	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	110	104
Parathion	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	104	104
Bromophos-ethyl	mg/kg	0.1	AT-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	86	86
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	84	1	74	84	13	74	84

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Date analysed	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	AT-008	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-012/017	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	[NT]	24	78	80	3	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	228853-4
Date extracted	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Date analysed	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	71	94
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	84	1	74	84	13	74	84

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Date analysed	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	[NT]	24	78	80	3	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	228853-4
Date prepared	-			23/10/2019	1	23/10/2019	23/10/2019		23/10/2019	23/10/2019
Date analysed	-			24/10/2019	1	24/10/2019	24/10/2019		24/10/2019	24/10/2019
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	113	87
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	104	89
Chromium	mg/kg	1	Metals-020	<1	1	17	17	0	114	90
Copper	mg/kg	1	Metals-020	<1	1	6	6	0	106	98
Lead	mg/kg	1	Metals-020	<1	1	6	7	15	114	91
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	97	92
Nickel	mg/kg	1	Metals-020	<1	1	7	6	15	104	90
Zinc	mg/kg	1	Metals-020	<1	1	21	23	9	110	93

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	24	23/10/2019	23/10/2019		[NT]	[NT]
Date analysed	-			[NT]	24	24/10/2019	24/10/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	24	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	24	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	24	17	17	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	24	3	3	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	24	4	4	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	24	3	3	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	24	7	6	15	[NT]	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sam

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

Report Comments

Asbestos: Excessive sample volumes were provided for asbestos analysis.
A portion of the supplied samples were sub-sampled according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples 228853-1,4,6,8,11,13,16,18,20,22,26,29,31,35,37 were sub-sampled from bags provided by the client.

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 228853-24,33 were sub-sampled from jars provided by the client.

Envirolab Services Pty Ltd
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customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Geotechnics
Attention	Katrina Taylor

Sample Login Details

Your reference	E30991BT, Griffith
Envirolab Reference	228853
Date Sample Received	21/10/2019
Date Instructions Received	21/10/2019
Date Results Expected to be Reported	28/10/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	44 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	4.0
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils	On Hold
BH201-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH201-0.4-0.5									✓
BH201-2.2-2.6									✓
BH202-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH202-0.5-0.6									✓
BH203-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH203-0.2-0.4									✓
BH204-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH204-0.2-0.4									✓
BH204-0.85-0.95									✓
BH205-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH205-0.2-0.4									✓
BH206-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH206-0.5-0.6									✓
BH206-0.9-1.0									✓
BH207-0.05-0.1	✓	✓	✓	✓	✓	✓	✓	✓	
BH207-0.1-0.3									✓
BH208-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH208-0.3-0.5									✓
BH209-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH209-0.2-0.4									✓
BH210-0.05-0.1	✓	✓	✓	✓	✓	✓	✓	✓	
BH210-0.2-0.4									✓
BH211-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH211-0.5-0.6									✓
BH212-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH212-0.2-0.4									✓
BH212-0.85-0.95									✓
BH213-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH213-0.2-0.4									✓
BH214-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH214-0.3-0.5									✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils	On Hold
BH215-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH215-0.5-0.6									✓
BH216-0.1-0.3	✓	✓	✓	✓	✓	✓	✓	✓	
BH216-0.6-0.85									✓
BH217-0.1-0.3	✓	✓	✓	✓	✓	✓	✓	✓	
BH217-0.3-0.5									✓
DUP1	✓	✓	✓				✓		
DUP3									✓
DUP4									✓
DUP5									✓
TB1KS	✓								
BH202-0.7-0.8									✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E30991BT Date Results Required: STANDARD Page: 1 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: ktaylor@jkenvironments.com.au

Location:	Griffith	Sample Preserved In Esky on Ice															
Sampler:	KKS	Tests Required															

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo #6a	Combo #3	Asbestos detection	ph / CEC / Clay content	BTEX							
15-Oct-19	1	BH201	0.1-0.2	G, A	0	F: Silty CLAY	X											
15-Oct-19	2	BH201	0.4-0.5	G	0	Silty CLAY												
15-Oct-19	3	BH201	2.2-2.6	G	0	Siltstone												
15-Oct-19	4	BH202	0.1-0.2	G, A	0	F: Silty CLAY	X											
15-Oct-19	5	BH202	0.5-0.6	G, A	0	F: Silty CLAY												
15-Oct-19	6	BH203	0.1-0.2	G, A	0	F: Silty CLAY	X											
15-Oct-19	7	BH203	0.2-0.4	G	0	F: Silty CLAY												
15-Oct-19	NR	BH203	0.7-0.8	G	0	Silty CLAY												
16-Oct-19	8	BH204	0.1-0.2	G, A	0	F: Silty GRAVEL	X											
16-Oct-19	9	BH204	0.2-0.4	G	0	Silty CLAY												
16-Oct-19	10	BH204	0.85-0.95	G	0	Silty CLAY												
16-Oct-19	11	BH205	0.1-0.2	G, A	0	F: Silty GRAVEL	X											
16-Oct-19	12	BH205	0.2-0.4	G	0	Silty CLAY												
16-Oct-19	13	BH206	0.1-0.2	G, A	0	F: Silty CLAY	X											
16-Oct-19	14	BH206	0.5-0.6	G, A	0	F: Silty CLAY												
16-Oct-19	15	BH206	0.9-1.0	G	0	Silty CLAY												
16-Oct-19	16	BH207	0.05-0.1	G, A	0	F: Silty GRAVEL	X											
16-Oct-19	17	BH207	0.1-0.3	G, A	0	Silty CLAY												
16-Oct-19	18	BH208	0.1-0.2	G, A	0	F: Silty GRAVEL	X											
16-Oct-19	19	BH208	0.3-0.5	G	0	Silty CLAY												
17-Oct-19	20	BH209	0.1-0.2	G, A	0	F: Clayey SILT	X											
17-Oct-19	21	BH209	0.2-0.4	G	0	Siltstone												
17-Oct-19	22	BH210	0.05-0.1	G, A	0	Clayey SILT	X											
17-Oct-19	23	BH210	0.2-0.4	G	0	Siltstone												

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

ENVIROLAB

Job No: 228853

Date Received: 21/10/19

Time: 15:00

Received by: SO

Cooling: Ice/Icepack/Ambient

Security: Intact / Broken / None

Remarks (comments/detection limits required):

See pg 2.

Sample Containers:
G - 250g Glass Jar
A - Ziplock Asbestos Bag
W - 500ml Ziplock Asbestos Bag
P - Plastic Bag
V - BTEX Vial

Relinquished By: K.Taylor	Date: 21-Oct-19	Time:	Received By: Jason Day ELS SYD	Date: 21/10/19 15:00

2019

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E30991BT Date Results Required: STANDARD Page: 2 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: ktaylor@jkenvironments.com.au

Location:	Griffith	Sample Preserved In Esky on Ice
Sampler:	KKS	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo #6a	Combo #3	Asbestos detection	ph / CEC / Clay content	BTEX							
17-Oct-19	24	BH211	0.1-0.2	G	0	Clayey SILT	X											
17-Oct-19	25	BH211	0.5-0.6	G	0	Clayey SILT												
17-Oct-19	26	BH212	0.1-0.2	G, A	0	F: Silty CLAY	X											
17-Oct-19	27	BH212	0.2-0.4	G	0	Clayey SILT												
17-Oct-19	28	BH212	0.85-0.95	G	0	Clayey SILT												
17-Oct-19	29	BH213	0.1-0.2	G, A	0	F: Silty GRAVEL	X											
17-Oct-19	30	BH213	0.2-0.4	G	0	Clayey SILT												
16-Oct-19	31	BH214	0.1-0.2	G, A	0	F: Silty GRAVEL	X											
16-Oct-19	32	BH214	0.3-0.5	G	0	Clayey SILT												
16-Oct-19	33	BH215	0.1-0.2	G	0	F: Silty CLAY	X											
16-Oct-19	34	BH215	0.5-0.6	G	0	Silty CLAY												
17-Oct-19	35	BH216	0.1-0.3	G	0	F: Silty CLAY	X											
17-Oct-19	36	BH216	0.6-0.85	G	0	Clayey SILT												
17-Oct-19	37	BH217	0.1-0.3	G	0	F: Silty CLAY	X											
17-Oct-19	38	BH217	0.3-0.5	G	0	Clayey SILT												
15 Oct	39	DUP1	-	G, A	-	Soil		X										
17 Oct	-	DUP2	-	G, A	-	Soil		X										
17 Oct	40	DUP3	-	G, A	-	Soil												
17 Oct	41	DUP4	-	G, A	-	Soil												
17 Oct	42	DUP5	-	G, A	-	Soil												
17 Oct	43	TB1KS	—	G	—	Sand.					X							
Extra → Received -3D	44	BH202	0.7-0.8	G		Soil												

Remarks (comments/detection limits required):
*Please send DUP2 to Melbourne Envirolab as interlab dup.

Sample Containers:
G - 250g Glass Jar
A - Ziplock Asbestos Bag
W - 500ml Ziplock Asbestos Bag
P - Plastic Bag
V - BTEX Vial

Relinquished By: K.Taylor	Date: 21-Oct-19	Time:	Received By: Jason Day EES SYD	Date: 21/10/19 15:00

Soil

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CERTIFICATE OF ANALYSIS 228853-A

Client Details

Client	JK Geotechnics
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E30991BT, Griffith**
Number of Samples	44 Soil
Date samples received	21/10/2019
Date completed instructions received	28/10/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	04/11/2019
Date of Issue	31/10/2019

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Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Loren Bardwell, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

CEC						
Our Reference		228853-A-16	228853-A-18	228853-A-29	228853-A-31	228853-A-35
Your Reference	UNITS	BH207	BH208	BH213	BH214	BH216
Depth		0.05-0.1	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.3
Date Sampled		16/10/2019	16/10/2019	17/10/2019	16/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Exchangeable Ca	meq/100g	15	23	7.5	30	17
Exchangeable K	meq/100g	0.9	0.5	0.4	0.8	0.7
Exchangeable Mg	meq/100g	1.8	12	1.9	2.2	3.3
Exchangeable Na	meq/100g	0.35	1.1	0.12	0.34	<0.1
Cation Exchange Capacity	meq/100g	18	37	10	33	21

Metals in TCLP USEPA1311						
Our Reference		228853-A-16	228853-A-18	228853-A-29	228853-A-31	228853-A-35
Your Reference	UNITS	BH207	BH208	BH213	BH214	BH216
Depth		0.05-0.1	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.3
Date Sampled		16/10/2019	16/10/2019	17/10/2019	16/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Date analysed	-	29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
pH of soil for fluid# determ.	pH units	8.5	9.2	8.5	9.6	9.2
pH of soil TCLP (after HCl)	pH units	1.8	1.8	1.7	2.9	1.7
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.0	5.1	5.0	5.5	5.0
Nickel in TCLP	mg/L	<0.02	0.02	<0.02	<0.02	<0.02

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			31/10/2019	16	31/10/2019	31/10/2019		31/10/2019	[NT]
Date analysed	-			31/10/2019	16	31/10/2019	31/10/2019		31/10/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	16	15	15	0	108	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	16	0.9	0.9	0	110	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	16	1.8	1.6	12	107	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	16	0.35	0.30	15	110	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			29/10/2019	29	29/10/2019	29/10/2019		29/10/2019	[NT]
Date analysed	-			29/10/2019	29	29/10/2019	29/10/2019		29/10/2019	[NT]
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	29	<0.02	<0.02	0	88	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sam

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Geotechnics
Attention	Katrina Taylor

Sample Login Details

Your reference	E30991BT, Griffith
Envirolab Reference	228853-A
Date Sample Received	21/10/2019
Date Instructions Received	28/10/2019
Date Results Expected to be Reported	04/11/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	44 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	4.0
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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Sample ID	CEC	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Nickel in TCLP	On Hold
BH201-0.1-0.2							✓
BH201-0.4-0.5							✓
BH201-2.2-2.6							✓
BH202-0.1-0.2							✓
BH202-0.5-0.6							✓
BH203-0.1-0.2							✓
BH203-0.2-0.4							✓
BH204-0.1-0.2							✓
BH204-0.2-0.4							✓
BH204-0.85-0.95							✓
BH205-0.1-0.2							✓
BH205-0.2-0.4							✓
BH206-0.1-0.2							✓
BH206-0.5-0.6							✓
BH206-0.9-1.0							✓
BH207-0.05-0.1	✓	✓	✓	✓	✓	✓	
BH207-0.1-0.3							✓
BH208-0.1-0.2	✓	✓	✓	✓	✓	✓	
BH208-0.3-0.5							✓
BH209-0.1-0.2							✓
BH209-0.2-0.4							✓
BH210-0.05-0.1							✓
BH210-0.2-0.4							✓
BH211-0.1-0.2							✓
BH211-0.5-0.6							✓
BH212-0.1-0.2							✓
BH212-0.2-0.4							✓
BH212-0.85-0.95							✓
BH213-0.1-0.2	✓	✓	✓	✓	✓	✓	
BH213-0.2-0.4							✓
BH214-0.1-0.2	✓	✓	✓	✓	✓	✓	
BH214-0.3-0.5							✓

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Sample ID	CEC	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Nickel in TCLP	On Hold
BH215-0.1-0.2							✓
BH215-0.5-0.6							✓
BH216-0.1-0.3	✓	✓	✓	✓	✓	✓	
BH216-0.6-0.85							✓
BH217-0.1-0.3							✓
BH217-0.3-0.5							✓
DUP1							✓
DUP3							✓
DUP4							✓
DUP5							✓
TB1KS							✓
BH202-0.7-0.8							✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Andrew Fitzsimons

From: Katrina Taylor <KTaylor@jkenvironments.com.au>
Sent: Monday, 28 October 2019 4:01 PM
To: Jacinta Hurst; Samplereceipt
Subject: RE: Results for Registration 228853 E30991BT, Griffith

Follow Up Flag: Follow up
Flag Status: Flagged

Afternoon,

Please schedule the following samples for the below indicated analysis on standard turnaround:

Sample ref.			
BH207 (0.05-0.1)	CEC	TCLP Nickel	-16
BH208 (0.1-0.2)	CEC	TCLP Nickel	-18
BH213 (0.1-0.2)	CEC	TCLP Nickel	-29
BH214 (0.1-0.2)	CEC	TCLP Nickel	-31
BH216 (0.1-0.3)	CEC	TCLP Nickel	-35

Ref: 228853-A
TAT: Std
Due: 4/11/19

Thank you!

Regards
Katrina Taylor
Associate | Environmental Scientist
NSW Licensed Asbestos Assessor

T: +612 9888 5000
E: KTaylor@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

From: Jacinta Hurst <JHurst@envirolab.com.au>
Sent: Monday, 28 October 2019 2:37 PM
To: Katrina Taylor <KTaylor@jkenvironments.com.au>
Subject: Results for Registration 228853 E30991BT, Griffith

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC/paperwork received from you
an Excel or .csv file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
customerservice@envirolab.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
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melbourne@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 18650

Client Details

Client	JK Environments
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E30991BT**
Number of Samples	1 Soil
Date samples received	23/10/2019
Date completed instructions received	23/10/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	29/10/2019
Date of Issue	29/10/2019

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Chris De Luca, Operations Manager

Authorised By

Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		18650-1
Your Reference	UNITS	DUP2
Date Sampled		17/10/2019
Type of sample		Soil
Date extracted	-	24/10/2019
Date analysed	-	26/10/2019
vTRH C_6 - C_9	mg/kg	<25
vTRH C_6 - C_{10}	mg/kg	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	81

TRH Soil C10-C40 NEPM		
Our Reference		18650-1
Your Reference	UNITS	DUP2
Date Sampled		17/10/2019
Type of sample		Soil
Date extracted	-	24/10/2019
Date analysed	-	25/10/2019
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	82

PAHs in Soil		
Our Reference		18650-1
Your Reference	UNITS	DUP2
Date Sampled		17/10/2019
Type of sample		Soil
Date extracted	-	24/10/2019
Date analysed	-	25/10/2019
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d_{14}	%	80

Acid Extractable metals in soil		
Our Reference		18650-1
Your Reference	UNITS	DUP2
Date Sampled		17/10/2019
Type of sample		Soil
Date digested	-	25/10/2019
Date analysed	-	25/10/2019
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	27
Copper	mg/kg	42
Lead	mg/kg	82
Mercury	mg/kg	<0.1
Nickel	mg/kg	21
Zinc	mg/kg	220

Moisture		
Our Reference		18650-1
Your Reference	UNITS	DUP2
Date Sampled		17/10/2019
Type of sample		Soil
Date prepared	-	24/10/2019
Date analysed	-	25/10/2019
Moisture	%	15

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/10/2019	[NT]	[NT]	[NT]	[NT]	24/10/2019	[NT]
Date analysed	-			26/10/2019	[NT]	[NT]	[NT]	[NT]	26/10/2019	[NT]
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	90	[NT]
vTRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	93	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	82	[NT]	[NT]	[NT]	[NT]	83	[NT]

QUALITY CONTROL: TRH Soil C10-C40 NEPM						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/10/2019	[NT]	[NT]	[NT]	[NT]	24/10/2019	[NT]
Date analysed	-			25/10/2019	[NT]	[NT]	[NT]	[NT]	25/10/2019	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate o-Terphenyl	%		Org-003	87	[NT]	[NT]	[NT]	[NT]	78	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/10/2019	[NT]	[NT]	[NT]	[NT]	24/10/2019	[NT]
Date analysed	-			25/10/2019	[NT]	[NT]	[NT]	[NT]	25/10/2019	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	76	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-012	98	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			25/10/2019	[NT]	[NT]	[NT]	[NT]	25/10/2019	[NT]
Date analysed	-			25/10/2019	[NT]	[NT]	[NT]	[NT]	25/10/2019	[NT]
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	[NT]	[NT]	105	[NT]
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	[NT]	[NT]	106	[NT]
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sam

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

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommend

Measurement Uncertainty estimates are available for most tests upon request.

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

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Katrina Taylor

Sample Login Details

Your reference	E30991BT
Envirolab Reference	18650
Date Sample Received	23/10/2019
Date Instructions Received	23/10/2019
Date Results Expected to be Reported	29/10/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	17.3
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Pamela Adams	Analisa Mathrick
Phone: 03 9763 2500	**Phone: 03 9763 2500**
Fax: 03 9763 2633	**Fax: 03 9763 2633**
Email: padams@envirolab.com.au	**Email: amathrick@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	TRH Soil C10-C40 NEPM	PAHs in Soil	Acid Extractable metalsin soil
DUP2	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E30991BT Date Results Required: STANDARD Page: 2 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: ktaylor@jkenvironments.com.au

Location: Griffith
Sampler: KKS

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo #6a	Combo #3	Asbestos detection	ph / CEC / Clay content	BTEX
17-Oct-19	24	BH211	0.1-0.2	G	0	Clayey SILT	X				
17-Oct-19	25	BH211	0.5-0.6	G	0	Clayey SILT					
17-Oct-19	26	BH212	0.1-0.2	G, A	0	F: Silty CLAY	X				
17-Oct-19	27	BH212	0.2-0.4	G	0	Clayey SILT					
17-Oct-19	28	BH212	0.85-0.95	G	0	Clayey SILT					
17-Oct-19	29	BH213	0.1-0.2	G, A	0	F: Silty GRAVEL	X				
17-Oct-19	30	BH213	0.2-0.4	G	0	Clayey SILT					
16-Oct-19	31	BH214	0.1-0.2	G, A	0	F: Silty GRAVEL	X				
16-Oct-19	32	BH214	0.3-0.5	G	0	Clayey SILT					
16-Oct-19	33	BH215	0.1-0.2	G	0	F: Silty CLAY	X				
16-Oct-19	34	BH215	0.5-0.6	G	0	Silty CLAY					
17-Oct-19	35	BH216	0.1-0.3	G	0	F: Silty CLAY	X				
17-Oct-19	36	BH216	0.6-0.85	G	0	Clayey SILT					
17-Oct-19	37	BH217	0.1-0.3	G	0	F: Silty CLAY	X				
17-Oct-19	38	BH217	0.3-0.5	G	0	Clayey SILT					
15 Oct	39	DUP1	-	G, A	-	Soil		X			
17 Oct	-	DUP2	-	G, A	-	Soil		X			
17 Oct	40	DUP3	-	G, A	-	Soil					
17 Oct	41	DUP4	-	G, A	-	Soil					
17 Oct	42	DUP5	-	G, A	-	Soil					
17 Oct	43	TB1KS	—	G	—	Sand.					X
Extra → Received -3D	44	BH202	0.7-0.8	G		Soil					

ENVIROLAB

Envirolab Services
25 Research Drive
Croydon South VIC 3136
Ph: (03) 9763 2500

Job No: 18650
Date Received: 23/10/19
Time Received: 12:55
Received By: GS
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

17.3

Remarks (comments/detection limits required):
*Please send DUP2 to Melbourne Envirolab as inter lab dup.

Sample Containers:
G - 250g Glass Jar
A - Ziplock Asbestos Bag
W - 500ml Ziplock Asbestos Bag
P - Plastic Bag
V - BTEX Vial

Relinquished By: K.Taylor	Date: 21-Oct-19	Time:	Received By: Jason Dey EES SYD	Date: 21/10/19 15:00

EES Sydney; relinquished by Trudad Comelli 22.10.19, 11:40

SAMP

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E30991BT Date Results Required: STANDARD Page: 1 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: ktaylor@jkenvironments.com.au

Location: Griffith
Sampler: KKS

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo #6a	Combo #3	Asbestos detection	ph / CEC / Clay content	BTEX
15-Oct-19	1	BH201	0.1-0.2	G, A	0	F: Silty CLAY	X				
15-Oct-19	2	BH201	0.4-0.5	G	0	Silty CLAY					
15-Oct-19	3	BH201	2.2-2.6	G	0	Siltstone					
15-Oct-19	4	BH202	0.1-0.2	G, A	0	F: Silty CLAY	X				
15-Oct-19	5	BH202	0.5-0.6	G, A	0	F: Silty CLAY					
15-Oct-19	6	BH203	0.1-0.2	G, A	0	F: Silty CLAY	X				
15-Oct-19	7	BH203	0.2-0.4	G	0	F: Silty CLAY					
15-Oct-19	NR	BH203	0.7-0.8	G	0	Silty CLAY					
16-Oct-19	8	BH204	0.1-0.2	G, A	0	F: Silty GRAVEL	X				
16-Oct-19	9	BH204	0.2-0.4	G	0	Silty CLAY					
16-Oct-19	10	BH204	0.85-0.95	G	0	Silty CLAY					
16-Oct-19	11	BH205	0.1-0.2	G, A	0	F: Silty GRAVEL	X				
16-Oct-19	12	BH205	0.2-0.4	G	0	Silty CLAY					
16-Oct-19	13	BH206	0.1-0.2	G, A	0	F: Silty CLAY	X				
16-Oct-19	14	BH206	0.5-0.6	G, A	0	F: Silty CLAY					
16-Oct-19	15	BH206	0.9-1.0	G	0	Silty CLAY					
16-Oct-19	16	BH207	0.05-0.1	G, A	0	F: Silty GRAVEL	X				
16-Oct-19	17	BH207	0.1-0.3	G, A	0	Silty CLAY					
16-Oct-19	18	BH208	0.1-0.2	G, A	0	F: Silty GRAVEL	X				
16-Oct-19	19	BH208	0.3-0.5	G	0	Silty CLAY					
17-Oct-19	20	BH209	0.1-0.2	G, A	0	F: Clayey SILT	X				
17-Oct-19	21	BH209	0.2-0.4	G	0	Siltstone					
17-Oct-19	22	BH210	0.05-0.1	G, A	0	Clayey SILT	X				
17-Oct-19	23	BH210	0.2-0.4	G	0	Siltstone					

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 228853
Date Received: 21/10/19
Time: 15:00
Received by: JM
Cool: Ice/Icepack
Temp: Ambient

Remarks (comments/detection limits required):

See pg 2.

Sample Containers:
G - 250g Glass Jar
A - Ziplock Asbestos Bag
W - 500ml Ziplock Asbestos Bag
P - Plastic Bag
V - BTEX Vial

Relinquished By: K.Taylor	Date: 21-Oct-19	Time:	Received By: Jason Day ELS Syd	Date: 21/10/19 15:00

Relinquished at ELS, Sydney
Trinidad Camallen
22.10.19 11:40

Appendix F: Report Explanatory Notes

Standard Sampling Procedure

These protocols specify the basic procedures to be used when sampling soils or groundwater for environmental site assessments undertaken by JKE. The purpose of these protocols is to provide standard methods for: sampling, decontamination procedures for sampling equipment, sample preservation, sample storage and sample handling. Deviations from these procedures must be recorded.

A. Soil Sampling

- Prepare a borehole/test pit log or made a note of the sample description for stockpiles.
- Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill rig/excavator such that the machine can operate in a safe manner.
- Ensure all sampling equipment has been decontaminated prior to use.
- Remove any surface debris from the immediate area of the sampling location.
- Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possible to prevent the loss of any volatiles. If possible, fill the glass jars completely.
- Collect samples for asbestos analysis and place in a zip-lock plastic bag.
- Label the sampling containers with the JKE job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).
- Photoionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.
- Record the lithology of the sample and sample depth on the borehole/test pit log generally in accordance with AS1726-2017[15].
- Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with the standards outlined in the report.
- Check for the presence of groundwater after completion of each borehole using an electronic dip metre or water whistle. Boreholes should be left open until the end of fieldwork where it is safe to do so. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.
- Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

B. Decontamination Procedures for Soil Sampling Equipment

- All sampling equipment should be decontaminated between every sampling location. This excludes single use PVC tubing used for push tubes etc. Equipment and materials required for the decontamination include:
  - Phosphate free detergent (Decon 90);
  - Potable water;
  - Stiff brushes; and
  - Plastic sheets.
- Ensure the decontamination materials are clean prior to proceeding with the decontamination.
- Fill both buckets with clean potable water and add phosphate free detergent to one bucket.
- In the bucket containing the detergent, scrub the sampling equipment until all the material attached to the equipment has been removed.
- Rinse sampling equipment in the bucket containing potable water.

[15] Standards Australia, (2017), *Geotechnical Site Investigations.* (AS1726-2017)

- Place cleaned equipment on clean plastic sheets.

If all materials are not removed by this procedure, high-pressure water cleaning is recommended. If any equipment is not completely decontaminated by both these processes, then the equipment should not be used until it has been thoroughly cleaned.

QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[16] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[17]. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit*" (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;

[16] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[17] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All blank data reported;
- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{\text{(D1 – D2) x 100}}{\{(D1 + D2)/2\}}$$

Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in Section 4.1 of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this assessment is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	DUP1 (primary sample BH206 (0.1-0.2m))	Approximately 6% of primary samples	Heavy metals, TRH/BTEX, and PAHs
Inter-laboratory duplicate (soil)	DUP2 (primary sample BH213 (0.1-0.2m))	Approximately 6% of primary samples	Heavy metals, TRH/BTEX, and PAHs
Trip blank (soil)	TB1 (17 October 2019)	One for the assessment to demonstrate adequacy of storage and transport methods	BTEX

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table H to Table J inclusive) attached to the assessment report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report.

3. Data Assessment Criteria

JKE adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the

PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field Blanks

Acceptable targets for field blank samples in this report will be less than the PQL for organic analytes.

Laboratory QA/QC

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks

- All results less than PQL.

B. DATA EVALUATION

1. Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance with the JKE SSP. The SSP was developed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies.

Review of the project data also indicated that:

- COC documentation was adequately maintained;

- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

2. Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC.

3. Field QA/QC Sample Results

Field Duplicates

The results indicated that field precision was acceptable. RPD non-conformances were reported for some analytes as discussed below:

- Elevated RPDs were reported for chromium and zinc in DUP1/BH206 (0.1-0.2); and
- Elevated RPDs were reported for chromium, copper, lead, nickel and zinc in DUP2/BH213 (0.1-0.2).

Values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. As both the primary and duplicate sample results were less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Field Blanks

During the investigation, one soil trip blank was placed in the esky during sampling and transported back to the laboratory. The results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

4. Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this assessment.

C. DATA QUALITY SUMMARY

JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Appendix H: Guidelines and Reference Documents

Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

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