GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia
PO Box 1543, Macquarie Centre. North Ryde, NSW 2113

ABN 62 084 294 762
Tel: (02) 9679 8733
Fax: (02) 9679 8744

Report

Phase 2 Contamination Assessment
Proposed Landscape Works
St Francis Catholic College
Lots 20-23 DP 29317 Jardine Avenue
Edmondson Park NSW

Prepared for:
Catholic Education Office Diocese Wollongong
C/- JDH Architects
Suite 4b, Level 4
116-120 Kippax Street
SURRY HILLS NSW 2010

Ref: JC16261F-r1
December 2019

GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia
PO Box 1543, Macquarie Centre. North Ryde, NSW 2113

ABN 62 084 294 762
Tel: (02) 9679 8733
Fax: (02) 9679 8744

4th December 2019

Our Ref: JC16261F-r1

Catholic Education Office Diocese Wollongong
C/- JDH Architects
Suite 4b, Level 4
116-120 Kippax Street
SURRY HILLS NSW 2010

Attention: Mr Guiseppe Lauriola

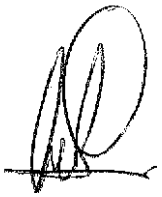
Dear Sir

Re: Phase 2 Contamination Assessment Report
Proposed Landscape Works
St Francis Catholic College
Lots 20-23 DP 29317 Jardine Drive Edmondson Park

We are pleased to submit our Phase 2 Contamination Assessment report for the proposed landscape works at the St Francis Catholic College.

Should you have any queries, please contact the undersigned.

Yours faithfully
GeoEnviro Consultancy Pty Ltd



Solern Liew MIEA CPEng NER
Director

D:\16JOB\261\B\JC16261F-r1.DOC

GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia
PO Box 1543, Macquarie Centre. North Ryde, NSW 2113

ABN 62 084 294 762
Tel: (02) 9679 8733
Fax: (02) 9679 8744

Document Control

Document Details	
Job No	JC16261F
Revision	r1
Title	Phase 2 Contamination Assessment Landscape Works St Francis Catholic College Lots 20-23 DP 29317 Jardine Avenue Edmondson Park NSW
Address	Lots 20-23 DP 29317 Jardine Avenue Edmondson Park NSW
Client	JDH Architects

Document Status				
Revision	**Status**	**Prepared By**	**Reviewed By**	**Date**
r1	Final	A Tejada	S Liew	4th December 2019

TABLE OF CONTENTS

Section Page

Contents

REFERENCES

LIST OF DRAWINGS

LIST OF TABLES

LIST OF APPENDICES

Executive Summary

This report presents the results of a Phase 2 Contamination Assessment for the proposed landscaping area (Subject Site) at St Francis Catholic College at Lots 20-23 DP 29317 Jardine Avenue Edmondson Park as shown on Drawing No 1.

We understand that the Subject Site comprises of the strip of land about 10m to 15m wide along the eastern, southern and western boundaries and this land will be landscaped as part of the St Francis Catholic College development as shown on Drawing No 1. Total area of landscaping is about 1 hectare

The objective of this study was to assess if significant land contamination is likely to exist on Subject Site that may present a risk to human health and/or the environment as a result of previous and current land use and to provide our assessment and recommendation on suitability of the site for the proposed landscape development.

The investigation consisted of a site inspection, test pit investigation, soil sampling and laboratory analysis.

At the time of our site investigation, the St Francis Catholic College occupied the site with school buildings on the western portion of the site and playing fields at the north-western portions. Some construction works for a new school building (Stage 2 – TAS Building) was underway at the central-eastern portion of the site with the south-eastern portion of the site mainly vacant.

The proposed landscape areas (Subject Site) along the boundaries of the school premises were mainly vacant with a portion of the eastern boundary occupied by a accessway for the construction works.

Field investigation included excavation of test pits within the Subject Site on the 29th October 2019. A total of twenty-four test pits (TP 1 to 24) were excavated across the site using a 5-tonne excavator. The test pit locations are shown on Drawing No 1.

The following is summary of subsurface conditions encountered during our test pit investigation;

- Topsoil and topsoil/fill were encountered on the surface or below fill in all test pits except TP 7, 8 and 15 consisting predominantly of Clayey Silt and Gravelly Clayey Silt of low liquid limit. Thickness of the topsoil and topsoil/fill was found to range from 100mm to 600mm.

- Some fill was encountered on the surface of TP 4 to 8 along the eastern southern boundary and below the topsoil/fill in TP 21 to 24 along the western boundary adjacent the current playing field. The fill was generally found to comprise of Crushed Rock, Gravelly Clayey Silt and Gravelly Silty Clay and have thickness ranging from 0.1m to 1.10m thick.

- Natural soil was encountered on the surface of TP 15 and below the topsoil, topsoil/fill and fill in the remaining test pits generally consisting of medium to high plasticity Silty Clay. The natural clay was assessed to be dry to moist (ie moisture content equal to or less than the plastic limit).

- Bedrock consisting was not encountered in any of the test pits which were taken to a maximum depth of about 1.5m below existing ground surface.

- All test pits were found to be dry during and upon completion of the test pit investigation.

Selected samples were analysed for potential contaminants consisting of Heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), Organochlorine Pesticides, Polychlorinated Biphenyls, Total Recoverable Hydrocarbons, Benzene, Toluene, Ethyl Benzene and Xylene, Polycyclic Aromatic Hydrocarbons and asbestos. All samples were found to have contaminants of concern within the Site Criteria.

Based on the results of this Phase 2 Contamination Assessment, we are of the opinion that the risk of gross ground contamination from previous landuse and activities causing adverse health risk to future occupants of the property is considered low and therefore the Subject Site is suitable for the proposed landscaping works.

Section 10 of this report provides additional comments on potential contamination issues including unexpected asbestos finds and recommendations to address these issues.

1. INTRODUCTION

This report presents the results of a Phase 2 Contamination Assessment for the proposed landscape area (ie Subject Site) at St Francis Catholic College at Nos 132, 130, 150 and 170, Lots 20-23 DP 29317 Jardine Avenue in Edmondson Park as shown on Drawing No 1. The investigation was commissioned by The Catholic Education Diocese of Wollongong (Purchase Order No 123P000638 dated 18th October 2019. The scope of this assessment was carried out in general accordance with our proposal referenced JC16261A-L8 dated 9th October 2019.

We understand that the Subject Site comprises of the strip of land about 10m to 15m wide along the eastern, southern and western boundaries and this land will be landscaped as part of the St Francis Catholic College development as shown on Drawing No 1. Total area of landscaping is about 1 hectare.

Lot 21 (No 150) was the subject of a contamination assessment undertaken by GeoEnviro in July 2015 (Reference 1) and Lots 20 (No 170), 22 (No 130) and 23 (No 132) were the subject of a preliminary site investigation undertaken by GHD in April 2015 (Reference 2). Based on the reports, the site was assessed to have a low risk of gross ground contamination with respect to the proposed school development. School development is currently in progress with a number of school buildings constructed and the proposed landscape areas partially formed from general bulk earthworks for the school playing fields and frontage road construction (ie Vinny Road and Guillemont Road).

The objective of this study was to assess if significant land contamination is likely to exist on Subject Site that may present a risk to human health and/or the environment as a result of previous and current land use and to provide our assessment and recommendation on suitability of the site for the proposed landscape development.

2. SCOPE OF WORK

This contamination assessment was performed in general conformance with our understanding of the guidelines by the Australian and New Zealand Conservation Council (ANZECC), the NSW Environment Protection Authority (NSW EPA) and the Office of Environment and Heritage (OEH).

The scope of work conducted consisted of:

- A review of the Contamination Assessment report prepared by GeoEnviro referenced JC15236A-r1(rev) dated July 2015 (Reference 1) and Preliminary Site Investigation report prepared by GHD referenced 21/23862 dated April 2015 (Reference 2).
- An inspection of the site to assess contamination within the site.
- Develop a conceptual site model to determine contamination sources and exposure pathways.
- Establish a sampling, analytical and quality plan.
- Undertake intrusive investigation by excavation of test pits using a 5-tonne excavator to assess subsurface ground condition.
- Undertake subsurface soil sampling from the test pits for laboratory analysis.
- Scheduling samples and laboratory analysis by Envirolab Services Pty Ltd to detect the presence or otherwise of the contaminants of concern.

3. SITE INFORMATION

3.1 Site Location

The proposed landscape works area (ie Subject Site) is situated along the eastern, southern and western boundaries of the St Francis Catholic College school premises occupying a strip of land about 10m to 25m along the full length of the boundaries.

St Francis Catholic College occupies 4 lots (ie Lots 20 to 23) and is situated on the south eastern corner of Jardine Drive in Edmondson Park as shown on Drawing No 1. The overall site is irregular in shape with an approximate 350m frontage to Jardine Drive and extends about 415m in the east-west orientation by about 255m in the north-south orientation.

The adjoining and surrounding properties consist of semi-rural residential properties and some recently completed subdivision developments with newly constructed houses.

3.2 Site Topography and Geological Setting

The site is situated on gently undulating terrain. Ground surface within the school site has a gentle slope of about 2 to 6 degrees dipping in a general direction toward the north and north western corner of the site. Based on the survey drawing provided, ground surface at the south eastern corner of the site is at about Reduced Level (RL) 67.5m Australian Height Datum (AHD) and ground surface drops to about RL 60.5m at the northern corner of the site and RL 53.5m at the north western corner.

The 1:100,000 Soil Landscape Map of Penrith (Reference 3) prepared by the Soil Conservation Services of NSW indicates the site to be underlain by residual soil belonging to the Blacktown landscape group. Typically, soil consists of low permeability, highly plastic and moderately reactive soil.

The 1:100,000 Geological Map of Penrith (Reference 4) indicates the underlying bedrock to consist of Bringelly shale of the Wianamatta Group consisting of shale, carbonaceous claystone, claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff.

3.3 Previous Contamination Assessment Reports

Lot 21 (No 150) of the St Francis Catholic College School site was the subject of a contamination assessment undertaken by GeoEnviro (Reference 1) in July 2015 and Lots 20 (No 170), 22 (No 130) and 23 (No 132) were the subject of a preliminary site investigation undertaken by GHD in April 2015 (Reference 2).

Extracts of the reports are attached in Appendix A and B of this report. The following is a summary of the previous assessment reports;

<u>GeoEnviro Consultancy Pty Ltd - Contamination Assessment referenced JC15236A-r1(rev) dated July 2015</u>

The scope of works included the following;

- A review of available information on the site history from aerial photographs and historical titles search from NSW Land and Property Information (LPI),
- A search of records on previous notices issued by NSW EPA.
- A search of information on Groundwater Boreholes in the area from the NSW Natural Resource Atlas (NRA)

- A review of Liverpool City Councils Section 149(2) Zoning Certificates
- A review of published information on the subsurface conditions in the general area
- An inspection of the site and test pit investigation to identify apparent or suspected areas of contamination.
- Collection of soil samples complying to the NSW EPA minimum sampling protocol.
- Collection of dam silt samples and water sample
- Laboratory analysis on the soil, silt and dam water samples to detect the presence or otherwise of the contaminants of concern

Field investigation included excavation of test pits using a tractor mounted backhoe on the 11th June 2015. A total of thirty-one test pits (TP 1 to 31) were excavated across the site (No 150).

Within the proposed landscaping areas, five test pits (TP 1 to 4 and 13) were excavated and the test pits encountered topsoil overlying natural Silty Clay, Gravelly Silty Clay and Shaley Clay. Shale bedrock was encountered in TP 1 and 13 at depths of 1.0m and 1.6m below existing ground surface respectively. Minor fill of 250mm thick was encountered on the surface of TP 4 consisting of crushed rock.

Selected samples were analysed for a range of potential contaminants consisting of Heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), Organochlorine pesticides, Polychlorinated Biphenyls, Total Recoverable Hydrocarbons, Benzene, Toluene, Ethyl Benzene and Xylene, Polycyclic Aromatic Hydrocarbons and asbestos. The results were interpreted by comparison with guideline Criteria recommended by the NSW EPA. The laboratory test results encountered all concentrations of contaminants of concern in all samples analysed to be all within the Site Criteria.

For the proposed landscape area (Subject Site), the report concluded the risk of gross ground contamination is generally considered low.

GHD – Preliminary Site Investigation referenced 21/23862 dated April 2015

The Preliminary Site Investigation undertaken by GHD included a desktop study and an intrusive site investigation.

The soil investigation consisted of drilling 40 boreholes (BH 101 to 120 and BH 201 to 220) across the entire school site with the exception of No 21. The boreholes were drilled to a maximum depth of 0.5m below existing ground surface. Selected soil samples were analysed for contaminants of potential concern.

A total of seven boreholes (BH 109, 110, 115, 120, 206, 209 and 210) were drilled at the approximate location of the proposed landscape works. Fill consisting of Clay was encountered on the surface of BH 115, 120, 206, 209 and 210 with thickness ranging from 100mm to 200mm. Natural soil consisting of Clay and Sandy Clay was encountered in the remaining boreholes and below the fill in BH 120 and 210.

The laboratory results indicate all samples collected and analysed to be below the laboratory limit of reporting and therefore within the adopted human health site investigation criteria.

For the proposed landscape area (Subject Site), the report concluded no gross contamination within the site.

3.4 Recent School Development Works

Following our previous contamination assessment in July 2015, development of the school site had been undertaken which involved earthworks over the majority of the site and construction of the western and northern portions of the school. This included construction of the current school blocks, playing fields and carpark.

Stage 2 development of the school site was subsequently carried out which currently includes the construction of a new two-storey building (TAS Block) towards the central-eastern portion of the site. The south-eastern portion of the school site was mainly vacant with stockpiles of soil and building material.

During this time, construction of Poziers Road to the northern boundary, Lacy Road to the southern boundary and half road construction of Vinnys Road to the eastern boundary were completed.

3.5 Existing Site Conditions and Description

A site visit was carried out on the 29th October 2019 by an environmental scientist to observe existing site features and identify obvious or suspected areas of potential contamination.

At the time of our site investigation, the St Francis Catholic College occupied western and northern portions of the site with school buildings and playing fields. Some construction works for a new school building (Stage 2 – TAS Building) was underway at the central-eastern portion of the site with the south-eastern portion of the site mainly vacant.

The proposed landscape areas (Subject Site) along the boundaries of the site were mainly vacant with a portion of the eastern boundary occupied by a driveway for the construction works.

4. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources and exposure pathways between those sources and receptors. The model provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or the future and it enables an assessment of the potential pathways.

4.1 Potentially Contaminated Media

The potential for contaminated media for the Subject Site includes topsoil, natural soil and surface water. Some fill may also be present in the construction work areas which may also be classified as potentially contaminated media. The site appeared to be mainly on natural ground and therefore not likely to have significant fill as a potential contaminated media.

Any fill encountered within the site has the potential to be contaminated with Heavy Metals, OCP, PCB TRH/BTEX/PAH and asbestos (ACM, AF/FA).

The potential leachability through rainfall and stormwater runoffs can lead to infiltration of the contaminated media through the topsoil/surface fill material and contaminating the underlying natural soil.

In view of the relatively low permeability of the underlying natural soil and as the property was used for residential and is situated away from contaminating activities (eg industrial, workshop) and water bodies (eg creek, drainage channel), contamination through ground water media is not conceivable.

4.2 Exposure Pathways

Taking into consideration the existing landuse as agricultural and the future potential site development activities, the potential contaminants in the above media has the potential to be mobilised through the following pathways;

- Dermal and oral contact to contaminated topsoil and surface fill (and associated dust) during excavation and construction works.
- Leaching of heavy metals into the ground and uptake of contaminants by vegetation (eg vegetables and fruit trees)/
- Ingestion via eating edible plants (eg vegetables and fruit trees) by site occupants.

- Direct ingestion of soil by children playing on the ground surface in unpaved areas and
- Inhalation of dust (including asbestos) by site occupants and construction workers.

4.3 Potential for Migration

Contaminants can migrate from site through wind, stormwater runoffs, infiltration of surface water and groundwater flows. The factors influencing the potential for contaminants to migrate include;

- Type of contaminants (eg mobility characteristics, bioability).
- Extent (eg localised or widespread) and concentrations of contaminants.
- Locality and source of contaminants
- Physical characteristics of the site (eg topography, geology, hydrology and hydrogeology).

The potential contaminants identified on this site are present in soil (eg impacted soil or fill and asbestos). There are no known liquid forms of contaminants on this site.

There is a potential for stormwater runoff infiltrating through the contaminated fill and leaching contaminants into the underlying natural soil. Excess stormwater runoffs has the potential to carry asbestos dust downstream and into adjoining sites.

There is no potential for vapours or ground gases associated with volatile contaminants generated from the site and impacting on adjoining sites.

4.4 Sensitive Receptors

Potential receptors of environmental impacts on the subject site include'

- Construction and maintenance workers during construction site redevelopment.
- Future site users following development of the site with the most sensitive receptor being a child.
- Land users in adjacent areas.

5. SAMPLING, ANALYTICAL AND QUALITY PLAN

5.1 Overview

The sampling analytical and quality plan has been developed in order to ensure that the data collected for this investigation is representative for the site assessment decisions. The plan has been completed in general accordance with the NSW EPA guidelines and includes;

- Data quality objectives
- Sampling methodologies and procedures
- Field screening methods
- Sample handling, preservation and storage procedures
- Analytical QA/QC

5.2 Data Quality Objectives

The purpose of establishing Data Quality Objectives (DQO) is to ensure that the field investigations and subsequent analyses are undertaken in a way that enables the collection and reporting of reliable data on which to base the assessment.

A process for establishing DQOs for a site has been defined by the US EPA. That process has been adopted within the Australian Standard: AS 4482.1-2005 and referenced by the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC, 1999*)* and the *Guidelines for the NSW Site Auditor Scheme, 2nd ed (*NSW DEC, 2006).

The DQO process, involves the following seven steps:

Step 1 State the problem;

The detailed site investigation is being undertaken in order to ascertain the current contamination status of the sites whether contamination present at the site may pose an unacceptable health and/or environmental risk under the current land use and whether the sites are suitable for the proposed development.

Step 2 Identify the decision;

The site investigations are to identify areas of environmental concerns which may be the source of potential contamination. To assess the suitability of the site for future use, decisions are to be made based on the following questions

- Is contamination present in soil at concentrations above the applicable approved guidelines?

- Where contamination has occurred, does it have the potential to adversely impact on human health and/or environmental receptors?
- Does the site appear suitable (from a contamination perspective) for the current and future proposed land use?

Step 3 Identify inputs to the decision;

Data to be inputted to the decision making process will include:

- Information gained from a review of existing information;
- Soil sampling at nominated locations (where access is available) across the site.
- Laboratory analytical results for relevant to the area of environmental concerns.
- Appropriate screening-level criteria (investigation thresholds) for soil.
- Quantitative data gained via intrusive sampling and analytical works
- Assessment of the suitability of the data obtained from sampling an analyses as measured against data quality indicators (DQIs).
- Assessment of analytical results against site suitable human health criteria.

Step 4 Define the study boundaries;

The lateral boundaries of the study area are the site boundaries, as depicted on the drawings.

The vertical boundary with respect to soil shall be the depth of the deepest soil borehole

Step 5 Develop a decision rule;

Project analytical data will be compared to appropriate NSW EPA prepared or endorsed guidelines for various land use. If the concentration of contaminants in the soils exceeds the adopted assessment criteria; an assessment of the need to further investigate, remediate and or manage the onsite impacts in relation to the proposed development will be undertaken.

On the basis of this initial comparison, plus an assessment of potential contaminant exposure pathways, a decision will be made as to whether or not the contamination may pose a potential risk, warranting management and/or remediation.

Step 6 Specify limits on decision errors; and

Guidance found in ASC NEPM (1999 amended 2013) Schedule B2 regarding 95% upper confidence limit (UCL) states that the 95% UCL of the arithmetic mean provides a 95% confidence level that the true population mean will be less than or equal to this value. Therefore a decision can be made based on a probability that 95% of the data collected will satisfy the site acceptance criteria. A limit on decision error will be 5% that a conclusive statement may be incorrect.

Step 7 Optimise the design for obtaining data.

The sampling program was designed with reference to the desktop works completed for the, sites and the known layout of site infrastructure. The sampling program was designed to target, those areas of the site where potential contamination was identified as being most likely

5.3 Data Quality Indicators

To minimise the potential for decision errors, Data Quality Indicators (DQIs) have been determined, for completeness, comparability, representativeness, precision and accuracy as detailed below;

The DQIs for sampling techniques and laboratory analysis of collected samples defines the acceptable level of error required for this investigation.

The data quality objectives will be assessed by reference to data quality indicators as follows:

- **Completeness** - defined as the percentage of measurements made which are judged to be valid measurements. To ensure data set completeness, the following is required:
  - Confirmation that all sampling methodology was completed in general accordance with GeoEnviro sampling quality assurance plan.
  - Chain of Custody and receipt forms.
  - Results from all Laboratory QA/QC samples (Lab blanks, matrix spikes, lab duplicates).
  - NATA accreditation stamp on all laboratory reports

- **Comparability** - is the confidence that data may be considered to be equivalent for each sampling and analytical event. It provides a qualitative parameter expressing the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples and ensuring analysing laboratories use consistent analysis techniques and reporting methods.

  Data comparability is maintained by ensuring that:

  - All site sampling events are undertaken following methodologies outlined in GeoEnviro Sampling Quality Assurance Plan and published guidelines.
  - NATA accredited laboratory methodologies shall be followed on all laboratory testing.

- **Representativeness** - expresses the degree which sample data accurately and precisely represents a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples in an appropriate pattern across the site, and by using an adequate number of sample locations to characterise the site. Consistent and repeatable sampling techniques and methods are utilised throughout the sampling.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the data is assessed by calculating the Relative Percent Difference (RPD) between duplicate sample pairs.

  $$RPD(\%) = [|C_0 - C_d| / C_0 + C_d)] \times 200$$

  Where Co = Analyte concentration of the original sample
  Cd = Analyte concentration of the duplicate sample

  GeoEnviro adopts nominal acceptance criteria of 30% RPD for field duplicates and splits for inorganics and nominal acceptance criteria of 50% RPD for field duplicates and splits for organics, however it is noted that this will not always be achieved, particularly in heterogenous soil or fill materials, or at low analyte concentrations

- **Accuracy** - measures the bias in a measurement system or a quantitative measure of the closeness of reported date to the true value. Accuracy can be undermined by such factors as field contamination of samples, poor preservation of samples, poor sample preparation techniques and poor selection of analysis techniques by the analysing laboratory. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes, laboratory blanks and analyses against reference standards.

  The nominal "acceptance limits" on laboratory control samples are defined as follows:

  – Laboratory spikes – 70-130% for metals / inorganics 60-140% for organics.

  – Laboratory duplicates – <30% for metals / inorganics, <50% for organics.

  – Laboratory blanks – <practical quantitation limit.

Accuracy of field works is assessed by examining the level of contamination detected in field and equipment blanks. Blanks should return concentrations of all organic analytes as being less than the practical quantitation limit of the testing laboratory.

6. INVESTIGATION AND ANALYSIS METHODOLOGY

6.1 Field Investigation

Field investigation included excavation of test pits on the 29th October 2019. A total of twenty-four test pits (TP 1 to 24) were excavated on the Subject Site using a 5-tonne excavator. The test pit locations are shown on Drawing No 1.

The test pits were excavated to depths varying from 0.4m to 1.5m below existing ground surface. The test pits were observed for groundwater during and upon completion of the excavation. The field results together with details of the strata encountered are presented in Table 1.

Environmental soil samples were collected in duplicate from surface and at lower depths. Disturbed samples were taken from the site to our laboratory for analysis. GeoEnviro Consultancy's standard procedures were used for sampling and more information on the procedures adopted is provided in Appendix C.

6.2 Laboratory Analysis

As part of the soil sampling program, selected soil samples were submitted to the nominated contracted laboratory for analysis of contaminants of potential concern consisting of the following;

- Heavy Metals - Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Mercury (Hg), Lead (Pb), Nickel (Ni) and Zinc (Zn)
- Organochlorine Pesticides (OCP).
- Polychlorinated Biphenyls (PCB)
- Total Recoverable Hydrocarbons (TRH)
- Benzene, Toluene, Ethyl Benzene and Xylene (BTEX)
- Polycyclic Aromatic Hydrocarbon (PAH)
- Asbestos
- pH

Individual samples were taken for laboratory analysis. The soil analytical schedule completed is presented in Table 2. The following is a summary of analysis undertaken;

Analytes	No of Samples	Samples
Heavy Metals, OCP, PCB, TRH, BTEX, PAH, Asbestos	13 Soil	TP 1 (0.0-0.1m), TP 3 (0.1-0.2m), TP 4 (0.2-0.3m), TP 7 (0.0-0.1m), TP 8 (0.5-0.6m), TP 10 (0.1-0.2m), TP 12 (0.2-0.3m), TP 14 (0.0-0.1m), TP 16 (0.1-0.2m), TP 18 (0.0-0.1m), TP 21 (0.2-0.3m), TP 23 (0.6-0.7m), TP 24 (0.2-0.3m),
Heavy Metals, OCP, PCB	4 Soil	TP 5 (0.1-0.2m), TP 11 (0.0-0.1m), TP 17 (0.0-0.1m), TP 20 (0.0-0.1m)
TRH, BTEX, PAH	3 Soil	TP 2 (0.0-0.1m), TP 13 (0.4-0.5m), TP 22 (0.1-0.2m),

The laboratory results are summarised in Tables 3 to 8. The laboratory test results are detailed on the attached Laboratory Test Report in Appendix D.

Soil analysis was performed by Envirolab Services Pty Ltd, a laboratory accredited by the National Association of Testing Authorities (NATA) for the tests performed. The analytical results and methods employed are presented in the Laboratory Test Report in Appendix D.

7. LEGISLATION AND GUIDELINES

7.1 Legislation

Since 1997, the DECCW has introduced significant reforms to the identification and management of contaminated sites within NSW. The purpose of reforms is to provide uniform state-wide control of the management, investigation and remediation of contaminated land. The following documents outline the reforms undertaken;

- The Contaminated Land Management Act 1997 (CLMA) establishes a process for investigating and remediating land where contamination presents a significant risk of harm to human health or the environment. The main objectives of CLMA are;
    i. To set out accountabilities for managing contaminated land, if a significant risk of harm is identified.
    ii. To set out the role of the DECCW in the supervision of contaminated site investigations and/or remediation.
    iii. To provide for the accreditation of site auditors of contaminated land to ensure appropriate standards of auditing in the management of contaminated land, and
    iv. To ensure that contaminated land is managed with regard to the principals of ecologically sustainable development.
- The OEH's Guidelines on the Significant Risk of Harm from Contaminated land and the Duty to Report, 1999 provide guidelines on the following;
    i. Assessing whether site contamination presents a significant risk of harm under the CLMA.
    ii. The duty to report to the OEH of a site is known of suspected to present a significant risk of harm under the CLMA.
- The State Environmental Planning Policy (SEPP) No 55. – Remediation of Land 1998, prepared by the Department of Urban Affairs and Planning (DUAP) is an environmental planning instrument that sets out matters which must be considered by local councils and other planning authorities when determining development application, or making zoning or rezoning decisions. The Managing Land Contamination: Planning Guidelines 1998, prepared by DUAP and the DECCW, have been developed to further provide guidance to consent authorities on their responsibilities under SEPP55 and the Environmental Planning and Assessment Act 1979.

7.2 Assessment Criteria

The results of laboratory analyses for this investigation were compared with published Australian contamination assessment criteria. These Criteria were originally presented in the Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, May 1992 (ANZECC/NHMRC Guidelines, Reference 5). The OEH endorsed the use of these guidelines for the assessment of contaminated sites.

More recent guidelines such as those published by the OEH and National Environmental Health Forum (NEHF) (Reference 7) are commonly used to assess contaminant concentrations. The NEHF criteria which was recently updated by the National Environment Protection Council Service Corporation (NEPC) in the National Environmental Protection (Assessment of Contaminated Sites) Measure (NEPM) – Schedule B1 (Reference 8) includes health based soil investigation levels (HBILs) and this was adopted by OEH in May 2013.

HBILs are scientifically based, generic assessment criteria designed to be used in the first stage (Tier 1 or 'screening') of an assessment of potential risks to human health from chronic exposure to contaminants. They are intentionally conservative and are based on a reasonable worst-case scenario.

For the purpose of assessing the contamination status of the site, the criteria for developed open space such as parks, playgrounds, playing fields (eg ovals), secondary schools and footpath that being HBIL C has been adopted as the Site Criteria. HBIL A residential with garden/accessible soil, has also been assessed for comparison.

The more recent updates to the NEPM criteria (Reference 7) have included Health Screening Levels (HSL) developed by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) leading to the adoption of health criteria for TRH, BTEX and PAH. The HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures and they apply to different soil types and depths below surface up to 4 m depth.

For the purpose of assessing the contamination status of the site for TRH, BTEX and PAH, the HSL A and B (Low to high density residential) have been adopted.

The NEPC also includes EIL criteria for the protection of species based on 95% survival and this criteria is based on average background concentrations (ABC) for individual sites and added contaminant levels (ACL) calculated from survival rates for various species to contaminant exposures in different settings. For ecological levels for TRH, BTEX and PAH, the NEPC has provided ecological screening level (ESL) for the assessment. The EIL and ESL criteria have been included in the relevant tables as a sensitivity measure for the protection of ecological diversity within the site.

The results of laboratory analysis of individual samples have been directly compared with the Criteria. The relevant criteria are presented in the summary table of results (Table 3 to 8).

In addition to the above, the NEPM 2013 guidelines address the issue of aesthetic considerations in relation to non-hazardous inert foreign material (refuse) in soil or fill resulting from human activities. The guidelines permit the presence of foreign matter within the fill to be retained within the site subject to compliant of the fill material to the Site Criteria and aesthetically acceptable (eg malodorous soils, discoloured chemical deposits, stained soil, large monolithic deposits/large inert foreign matter, putrescible refuse and animal remains). Though the guidelines do not outline specific trigger values, we consider fill containing greater than 5% by weight of foreign matter to be aesthetically unacceptable, therefore the insitu fill is within acceptable limits.

8. RESULTS OF THE INVESTIGATION

8.1 Subsurface Conditions

Reference should be made to the attached Table 1 for a summary of subsurface profiles encountered from the test pit investigation undertaken within the Subject Site. The following is a summary of the subsurface profiles encountered in test pits;

Topsoil and Topsoil/Fill

Topsoil and topsoil/fill were encountered on the surface or below fill in all test pits except TP 7, 8 and 15 consisting predominantly of Clayey Silt and Gravelly Clayey Silt of low liquid limit.

Thickness of the topsoil and topsoil/fill was found to range from 100mm to 600mm.

Fill

Some fill was encountered on the surface of TP 4 to 8 along the eastern southern boundary and below the topsoil/fill in TP 21 to 24 along the western boundary adjacent the current playing field.

The fill was generally found to comprise of Crushed Rock, Gravelly Clayey Silt and Gravelly Silty Clay and have thickness ranging from 0.1m to 1.10m thick.

Natural Soil

Natural soil was encountered on the surface of TP 15 and below the topsoil, topsoil/fill and fill in the remaining test pits generally consisting of medium to high plasticity Silty Clay. The natural clay was assessed to be dry to moist (ie moisture content equal to or less than the plastic limit).

Bedrock

Bedrock consisting was not encountered in any of the test pits which were taken to a maximum depth of about 1.5m below existing ground surface.

Groundwater

All test pits were found to be dry during and upon completion of the test pit investigation. No groundwater was encountered in all the test pits.

8.2 Laboratory Test Results

Heavy Metals

A total of seventeen soil samples were analysed for a range of heavy metals consisting of As, Cd, Cr, Cu, Pb, Hg, Ni and Zn. All concentrations of heavy metals were found to be within the HBIL A levels and therefore within the Site Criteria. The results are summarised in Table 3.

Organochlorine Pesticides (OCP)

A total of seventeen soil samples were analysed for a range of organochlorine pesticides. All concentrations of OCP were found to be below detection limits and therefore within the Site Criteria. The results are summarised in Table 4.

Polychlorinated Biphenyls (PCB)

A total seventeen soil samples were analysed for a range of Polychlorinated Biphenyls. All concentrations of PCB were found to be below the detection limits and therefore within the Site Criteria. The results are summarised in Table 5.

Total Recoverable Hydrocarbons (TRH)

A total of sixteen soil samples were analysed for TRH. All concentrations of TRH were found to have concentrations below the detection limits and therefore within the Site Criteria. The results are summarised in Table 6.

Benzene, Toluene, Ethyl Benzene and Xylene (BTEX) and Naphthalene

A total of sixteen soil samples were analysed for BTEX and Napthalene. All samples analysed were found to have concentrations of BTEX and Napthalene below laboratory detection limits and therefore within the Site Criteria. The results are summarised in Table 6.

Polycyclic Aromatic Hydrocarbons (PAH)

A total of sixteen soil samples were analysed for PAH. All samples analysed were found to have concentrations of PAH below laboratory detection limits or with low concentrations and therefore within the Site Criteria. The results are summarised in Table 7.

Asbestos

A total of thirteen soil samples and one material samples was analysed for the presence of Asbestos. All soil samples analysed did not detect respirable asbestos fibres. The results are summarised Table 8.

8.3 Quality Assurance/Quality Control (QA/QC)

Chain of Custody Forms and Preservation

The fieldwork for this investigation was carried out in accordance with GeoEnviro Consultancy's Standard procedures. This included collection of samples in new glass jars, preservation of samples in ice chests and transport of samples to the contract laboratory under chain of custody documentation. Refer to Appendix A.

Field Duplicates

Two duplicate sample (DUP A and DUP B) were prepared from primary samples TP 1 (0.0-0.1m) and TP 10 (0.1-0.2m) respectively and analysed. Refer to Table 9 for details.

The Relative Percentage Difference (RPD) values between primary and the duplicate sample was calculated to assess the results. A zero RPD means perfect agreement of results between the primary and duplicate sample whilst an RPD above 200% indicates total disagreement in results.

The maximum RPD value obtained for heavy metals (ie Lead) is 37.5%. The RPD values for OCP, PCB, TRH, BTEX and PAH could not be calculated because the results were below laboratory detection limits in both primary and duplicate samples.

The internal laboratory QA/QC results which are presented in the laboratory certificates in Appendix C are considered acceptable based on the duplicate and control samples analysed. The overall results suggest that the laboratory analysis carried out is reliable for this assessment.

Laboratory QA

Envirolab Services carried out internal QA/QC procedures which normally includes one or more of the following;

- Preparation and analysis of duplicate and triplicate samples to assess precision of laboratory results,
- A spike and duplicate spike is prepared for each sample batch. This involves spiking a sample with a known concentration of contaminant to verify the absence of matrix effects and to assess precision,
- Analysis of sample batch as reagent blanks to monitor reagent purity and as an over-all procedural blank. Reagent blank will also be run after samples with a high concentration to prevent carry over.
- A surrogate is added to all samples to monitor sample matrix effects throughout all analytical stages by calculating the % recovery at the completion of the analysis.

The laboratory control results are included in the laboratory test reports in Appendix D.

QA/QC Assessment

The QA/QC indicators either all complied with the required standards or showed variations that would have no significant effect on the quality or interpretation of the data. It is therefore assessed that for the purposes of this analysis, the QA/QC results are adequate and the quality of the data is acceptable for use in this contamination assessment.

9. ASSESSMENT AND SITE CHARACTERISATION

At the time of our site investigation, the St Francis Catholic College occupied the site with school buildings on the western portion of the site and playing fields at the north-western portions. Some construction works for new school building were underway at the central-eastern portion of the site with the south-eastern portion of the site mainly vacant.

The proposed landscape areas (Subject Site) along the boundaries of the school premises were mainly vacant with a portion of the eastern boundary occupied by a accessway for the construction works.

Field investigation included excavation of test pits within the Subject Site on the 29th October 2019. A total of twenty-four test pits (TP 1 to 24) were excavated across the site using a 5-tonne excavator. The test pit locations are shown on Drawing No 1.

The following is summary of subsurface conditions encountered during our test pit investigation;

- Topsoil and topsoil/fill were encountered on the surface or below fill in all test pits except TP 7, 8 and 15 consisting predominantly of Clayey Silt and Gravelly Clayey Silt of low liquid limit. Thickness of the topsoil and topsoil/fill was found to range from 100mm to 600mm.

- Some fill was encountered on the surface of TP 4 to 8 along the eastern southern boundary and below the topsoil/fill in TP 21 to 24 along the western boundary adjacent the current playing field. The fill was generally found to comprise of Crushed Rock, Gravelly Clayey Silt and Gravelly Silty Clay and have thickness ranging from 0.1m to 1.10m thick.

- Natural soil was encountered on the surface of TP 15 and below the topsoil, topsoil/fill and fill in the remaining test pits generally consisting of medium to high plasticity Silty Clay. The natural clay was assessed to be dry to moist (ie moisture content equal to or less than the plastic limit).

- Bedrock consisting was not encountered in any of the test pits which were taken to a maximum depth of about 1.5m below existing ground surface.

- All test pits were found to be dry during and upon completion of the test pit investigation. No groundwater was encountered in all the test pits.

Selected soil samples were analysed for potential contaminants consisting of Heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), Organochlorine Pesticides, Polychlorinated Biphenyls, Total Recoverable Hydrocarbons, Benzene, Toluene, Ethyl Benzene and Xylene, Polycyclic Aromatic Hydrocarbons and asbestos. All samples were found to have contaminants of concern within the Site Criteria.

The absence of wide spread chemical contaminations within the soil indicates that the potential for groundwater contamination beneath the site is low and the potential off-site impacts of contaminants on groundwater and waterbodies are considered negligible.

10. CONCLUSION AND RECOMENDATIONS

Based on the results of this Phase 2 Contamination Assessment, we are of the opinion that the risk of gross ground contamination from previous landuse and activities causing adverse health risk to future occupants of the property is considered low and therefore the Subject Site is suitable for the proposed landscaping works.

Notwithstanding the above, the following issues may need to be addressed prior to development of the site are as follows;

- All other surface rubbish material not mentioned above and asbestos material where encountered on-site should be appropriate disposed off-site to an OEH approved landfill.

- Though buried rubbish fill was not encountered in all of our test pits, it may still exist in between test pit locations. All buried rubbish fill if encountered during construction should be excavated and disposed off-site to an NSW EPA approved landfill. Rubbish fill containing bonded asbestos should be removed and disposal to a landfill as “Special Waste – Asbestos”.

- Rubbish fill containing bonded asbestos may still be present elsewhere within the site in between test pit locations and should bonded asbestos be encountered during construction works, all works should cease and an “Unexpected Finds Protocol” as outlined in Appendix E should be initiated. Should asbestos be encountered, the asbestos impacted fill should be disposed to a landfill as “Special Waste- Asbestos”.

- All fill material requiring off-site disposal should be laboratory tested and characterised in accordance with NSW EPA’s guidelines (Reference 10).

11. LIMITATIONS

The findings contained in this report are the results of Discrete/specific sampling methodologies used in accordance with normal practices and standards. There is no investigation which is thorough enough to preclude the presence of material which presently, or in future, may be considered hazardous to the site. The site has been the subject of dumping of rubbish fill in the past and the scope of this report do not cover for future dumping and burial of such material on the site.

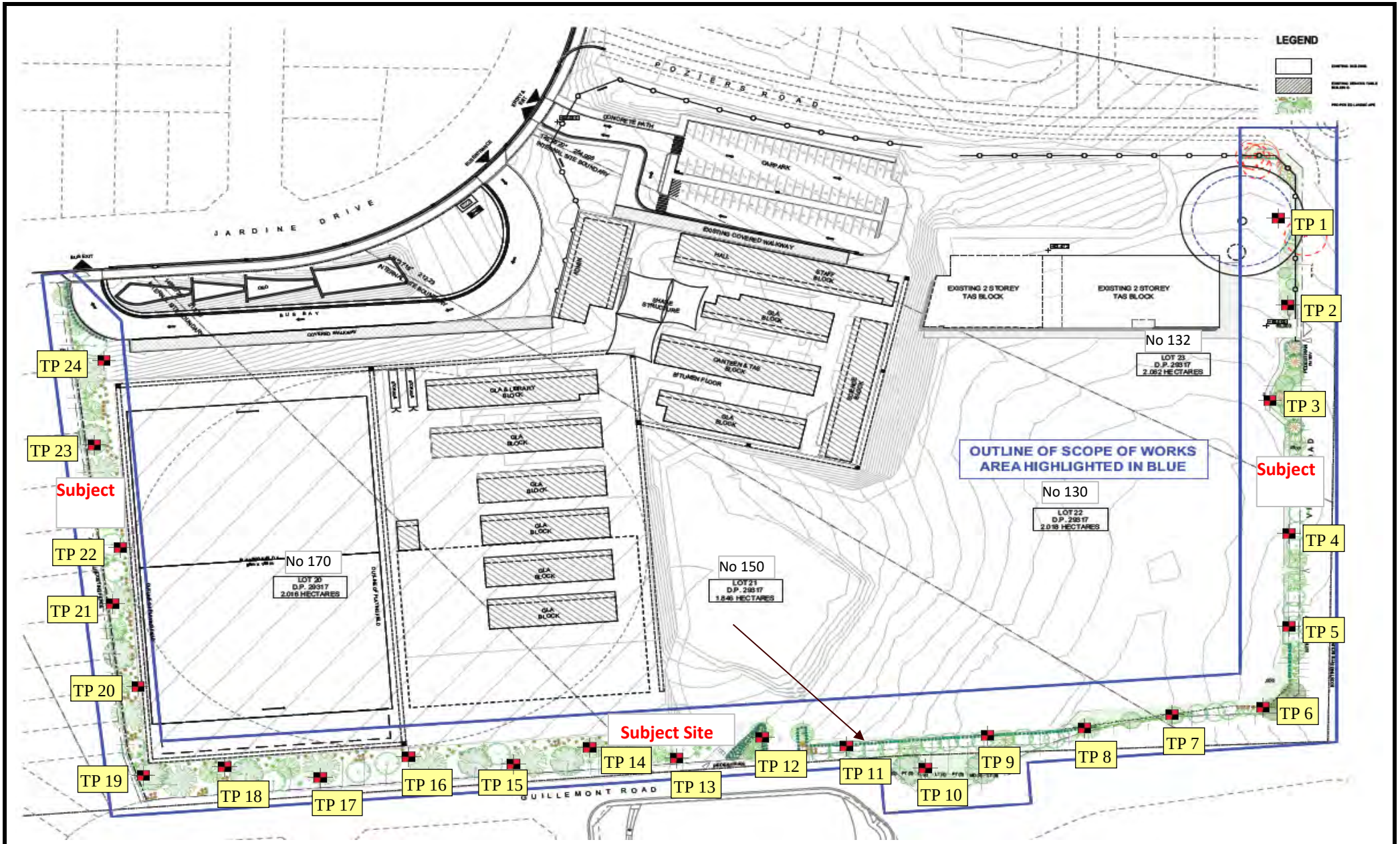
As regulatory evaluation criteria are constantly updated, concentrations of contaminants presently considered low, may in the future fall short of regulatory standards that require further investigation/redemption.

The statements presented in these documents are intended to advise you of what should be your realistic expectations of this report, and to present you with recommendations on how to minimise the risks associated with the ground works for this project. The document is not intended to reduce the level of responsibility accepted by GeoEnviro Consultancy Pty Ltd, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing. Attached in Appendix F are documents entitled "Important Information about Your Environmental Site Assessment" and Explanatory Notes in conjunction with which this report must be read, as it details important limitations regarding the investigation undertaken and this report.

C:\16JOB\261\F\JC16261F-r1
04/12/2019 12:39 PM

REFERENCES

1. *"Contamination Assessment – Lot 21 in DP 29317, No 150 Jardine Drive, Edmondson Park, NSW" – GeoEnviro Consultancy Pty Ltd reference JC15236A-r1(rev) dated July 2015*
2. *"Preliminary Site Investigation – 130, 132, 160 and 170 Jardine Drive Edmondson Park – GHD reference 21/23862 dated April 2015*
3. *1:100,000 Soil Landscape Map of Penrith – Department of Environment, Climate Change and Water; Soil Landscape Series – Sheet 9030 [Edition 1 Reprint]*
4. *1:100,000 Geological Map of Penrith– Geological Survey NSW Department Minerals and Energy; Geological Series Sheet 9030 (Edition 1) 1991*
5. *Australian & New Zealand Guidelines for the Assessment and Management of Contaminated Sites, Australian and New Zealand Conservation Council and National Health and Medical Research Council, 1992.*
6. *Assessment of Orchard and Market Garden Contamination - Contaminated Sites Discussion Paper, NSW EPA 1999.*
7. *Health Based Soil Investigation Levels, National Environmental Health Forum Monographs Soil Series No. 1 – 1996*
8. *National Environment Protection (Assessment of Site Contamination) Measure 1999(including updated Schedule B1 – 2014*
9. *Guidelines for Assessment Service Station-sites – NSW EPA 1994*
10. *Guidelines for the NSW Auditor Scheme, NSW EPA*
11. *Part 1 – Classifying Waste – 2015, NSW EPA*
12. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 – ANZECC.*
13. *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia – Department of Health -May 2009*



Legend

Test Pit

Subject Site

GeoEnviro Consultancy
Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia
Tel: (02) 96798733 Fax: (02) 96798744

Drawn By: AT	Date: 4/12/19	JDH Architects	
Checked By: SL	Date: 4/12/19	St Francis Catholic College, Edmondson Park	
Revision By:	Date:	Test Pit Location Plan	
Scale: Not to Scale	A3	Project No: JC16261F	Drawing No: 1

Test Pit Number	Depth (m)	Profile Type	Description
1	0.00-0.25	Topsoil	Clayey Silt: low liquid limit, brown with trace of gravel, dry
	0.25-0.50	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and brown, dry
2	0.00-0.25	Topsoil	Clayey Silt: low liquid limit, brown with trace of gravel, dry
	0.25-0.60	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and brown, dry
3	0.00-0.30	Topsoil	Clayey Silt: low liquid limit, brown with trace of gravel, dry
	0.30-0.70	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and brown, dry
4	0.00-0.10	Fill	Crushed Rock
Driveway	0.10-0.30	Topsoil	Clayey Silt: low liquid limit, brown with trace of gravel, dry
	0.30-0.60	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and brown, dry
5	0.00-0.18	Fill	Crushed Rock
Driveway	0.18-0.35	Topsoil	Clayey Silt: low liquid limit, brown with trace of gravel, dry
	0.35-0.70	Natural	(CH) Silty Clay: high plasticity, red brown, dry to moist
6	0.00-0.11	Fill	Crushed Rock
Driveway	0.11-0.35	Topsoil	Clayey Silt: low liquid limit, brown with trace of gravel, dry
	0.35-0.70	Natural	(CH) Silty Clay: high plasticity, red brown, dry to moist
7	0.00-0.80	Fill	Gravelly Clayey Silt: low liquid limit, brown with a metal pipe, dry
	0.80-1.20	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and brown, dry
8	0.00-1.00	Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	1.00-1.50	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and brown, dry
9	0.00-0.25	Topsoil	Clayey Silt: low liquid limit, brown, dry
	0.25-0.70	Natural	(CH) Silty Clay: high plasticity, red brown, dry to moist
10	0.00-0.25	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.25-0.60	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and grey brown, dry
11	0.00-0.30	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.30-0.60	Natural	(CI) Silty Clay: medium plasticity, brown and grey red, dry

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit

GeoEnviro Consultancy

TABLE 1 (Page 1 of 3)

SUMMARY OF SOIL PROFILE

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Test Pit Number	Depth (m)	Profile Type	Description
12	0.00-0.40	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.40-0.70	Natural	(CI) Silty Clay: medium plasticity, red grey, dry
13	0.00-0.55	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown with sandstone cobble, dry
	0.55-0.90	Natural	(CI) Silty Clay: medium plasticity, red and brown, dry
14	0.00-0.15	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.15-0.60	Natural	(CI) Silty Clay: medium plasticity, red grey, dry
15	0.00-0.40	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and brown, dry
16	0.00-0.25	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.25-0.60	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and grey brown, dry
17	0.00-0.30	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.30-0.55	Natural	(CI-CH) Silty Clay: medium to high plasticity, red and grey brown, dry
18	0.00-0.25	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.25-0.60	Natural	(CH) Silty Clay: high plasticity, red grey, dry
19	0.00-0.20	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.20-0.50	Natural	(CH) Silty Clay: high plasticity, red brown, dry
20	0.00-0.25	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.25-0.60	Natural	(CH) Silty Clay: high plasticity, red brown, dry
21	0.00-0.20	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.20-0.40	Fill	Gravelly Silty Clay: low to medium plasticity, brown ,dry
	0.40-0.70	Natural	(CH) Silty Clay: high plasticity, red brown, dry
22	0.00-0.10	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.10-0.60	Fill	Gravelly Silty Clay: low to medium plasticity, brown ,dry
	0.60-0.80	Topsoil	Clayey Silt: low liquid limit, brown, dry
	0.80-1.00	Natural	(CH) Silty Clay: high plasticity, red brown, dry

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit

GeoEnviro Consultancy

TABLE 1 (Page 2 of 3)

SUMMARY OF SOIL PROFILE

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Test Pit Number	Depth (m)	Profile Type	Description
23	0.00-0.15	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.15-0.70	Fill	Gravelly Silty Clay: low to medium plasticity, brown ,dry
	0.70-0.90	Natural	(CH) Silty Clay: high plasticity, red brown, dry
24	0.00-0.30	Topsoil/Fill	Gravelly Clayey Silt: low liquid limit, brown, dry
	0.30-0.70	Fill	Gravelly Silty Clay: low to medium plasticity, brown ,dry
	0.70-1.00	Natural	(CI-CH) Silty Clay: medium to high plasticity, grey and brown, dry

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit

GeoEnviro Consultancy

TABLE 1 (Page 3 of 3)

SUMMARY OF SOIL PROFILE

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Sample	Depths (m)	Sample Date	Sample Type	Analysis														
				pH	Heavy Metals								OCP	PCB	TRH	BTEX	PAH	Asbestos
					As	Cd	Cr	Cu	Pb	Hg	Ni	Zn						
TP 1	0-0.1	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 2	0.0-0.1	29/10/2019	Soil												o	o	o	
TP 3	0.1-0.2	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 4	0.2-0.3	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 5	0.1-0.2	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o				
TP 7	0.0-0.1	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 8	0.5-0.6	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 10	0.1-0.2	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 11	0.0-0.1	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o				
TP 12	0.2-0.3	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 13	0.4-0.5	29/10/2019	Soil												o	o	o	
TP 14	0.0-0.1	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 16	0.1-0.2	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 17	0.0-0.1	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o				
TP 18	0.0-0.1	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 20	0.0-0.1	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o				
TP 21	0.2-0.3	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 22	0.1-0.2	29/10/2019	Soil												o	o	o	
TP 23	0.6-0.7	29/10/2019	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP 24	0.2-0.3	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o	o
DUP A	-	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o	
DUP B	-	29/10/2019	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o	

Note: O denotes tested

GeoEnviro Consultancy

TABLE 2

Analytical Program

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Sample	Depths (m)	pH	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP 1	0-0.1	9.2	5	<0.4	9	23	19	<0.1	10	48
TP 3	0.1-0.2	6.5	8	<0.4	12	10	25	0.2	8	36
TP 4	0.2-0.3		5	<0.4	11	20	21	<0.1	9	44
TP 5	0.1-0.2		<4	<0.4	11	16	8	<0.1	6	24
TP 7	0.0-0.1		8	<0.4	16	23	21	<0.1	8	71
TP 8	0.5-0.6	6	8	<0.4	16	20	20	<0.1	8	45
TP 10	0.1-0.2		6	<0.4	11	15	13	<0.1	5	26
TP 11	0.0-0.1		5	<0.4	10	13	15	<0.1	5	25
TP 12	0.2-0.3	5.5	6	<0.4	13	16	18	<0.1	6	28
TP 14	0.0-0.1	6.1	5	<0.4	15	15	14	<0.1	7	25
TP 16	0.1-0.2		6	<0.4	13	17	18	<0.1	7	30
TP 17	0.0-0.1		6	<0.4	12	16	15	<0.1	6	30
TP 18	0.0-0.1	6.1	6	<0.4	11	25	15	<0.1	7	49
TP 20	0.0-0.1		8	<0.4	21	25	23	<0.1	10	59
TP 21	0.2-0.3	6.6	6	<0.4	12	28	18	<0.1	10	63
TP 23	0.6-0.7	6.1	6	<0.4	12	23	16	<0.1	7	31
TP 24	0.2-0.3		7	<0.4	21	24	20	<0.1	12	42
DUP A	-		<4	<0.4	7	32	13	<0.1	7	37
DUP B	-		5	<0.4	10	13	15	<0.1	5	24
HBILs 'A' Criteria			**100**	**20**	**100 (VI)**	**6000**	**300**	**40**	**400**	**7400**
HBILs 'C' Criteria			**300**	**90**	**300 (VI)**	**17000**	**600**	**80**	**1200**	**30000**
EIL Criteria*			**106**	**NA**	**263**	**210**	**1117**	**NA**	**38**	**269**

EIL Derivation

ABC[4]	**6**	**NA**	**13**	**20**	**17**	**NA**	**8**	**39**
ACL[5]	**100**	**NA**	**250**	**190**	**1100**	**NA**	**30**	**230**

Notes

1) All results are expressed as mg/kg and pH (units).

2) Figures in bold italics exceed the EIL Criteria

3) Figures in bold italics and underlined exceed the HBIL 'A' Criteria

4) Ambient Background Concentrations

5) Added Contaminant Limits

* EIL = ABC+ACL

GeoEnviro Consultancy

TABLE 3
Summary of Analytical Results - Heavy Metals

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Prepared By: SL Date: 4/12/2019
Checked By:__SG___Date:4/12/2019

Sample	Depths (m)	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-chlordane	Endosulfan I	pp-DDE	Dieldrin	Endrin	pp-DDD	Endosulfan II	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor	Total OCP
TP 1	0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 3	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 4	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 5	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 7	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 8	0.5-0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 10	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 11	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 12	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 14	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 16	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 17	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 18	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 20	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 21	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 23	0.6-0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 24	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUP A	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUP B	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HBILs 'A' Criteria		**10**				**6**		**6**		**50**		**270**	**240**	**6**	**10**	**240**		**240**			**300**	
HBILs 'C' Criteria		**10**				**10**		**10**		**70**		**340**	**400**	**10**	**20**	**400**		**400**			**400**	

Notes

1) All results are expressed as mg/kg and pH (units).

2) Figures in bold italics exceed the HBILs 'A' Criteria

GeoEnviro Consultancy

TABLE 4
Summary of Analytical Results - OCP

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Prepared by: SL Date: 4/12/2019
Checked By:__SG___Date:4/12/2019

Sample	Depths (m)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
TP 1	0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 3	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 4	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 5	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 7	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 8	0.5-0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 10	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 11	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 12	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 14	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 16	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 17	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 18	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 20	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 21	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 23	0.6-0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 24	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUP A	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUP B	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HBILs 'A' Criteria									**1**
HBILs 'C' Criteria									**1**

Notes

1) All results are expressed as mg/kg and pH (units).

2) Figures in bold italics exceed the HBILs 'A' Criteria

GeoEnviro Consultancy

TABLE 5
Summary of Analytical Results - PCB

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Prepared By: SL Date: 4/12/2019
Checked By:__SG___Date:4/12/2019

Sample	Depths (m)	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	C_{10}-C_{36}	F1 [4] C_6-C_{10}	F2 [5] $>C_{10}$-C_{16}	F3 C_{16}-C_{34}	F4 C_{34}-C_{40}	Volatile Organic Compounds (VOC)					
											Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene
TP 1	0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 2	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 3	0.1-0.2	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 4	0.2-0.3	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 7	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 8	0.5-0.6	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 10	0.1-0.2	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 12	0.2-0.3	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 13	0.4-0.5	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 14	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 16	0.1-0.2	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 18	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 21	0.2-0.3	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 22	0.1-0.2	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 23	0.6-0.7	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 24	0.2-0.3	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
DUP A	-	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
DUP B	-	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
HSLs 'A and B' Criteria (CLAY) 0m to <1m							**50**	**280**			**0.7**	**480**	**480**	**110**		**5**
1m to <2m							**90**				**1**			**310**		
2m to < 4m							**150**				**2**					
4m+							**290**				**3**					
ESL Criteria							**180**	**120**	**1300**	**5600**	**65**	**105**	**125**	**45**		

Notes

1) All results are expressed as mg/kg unless otherwise specified

2) Figures in bold exceed the NSW DEC criteria

3) ND Not detected

4) F1 is C_6-C_{10} minus the sum of the BTEX concentrations

5) F2 is $>C_{10}$-C_{16} Minus Napthalene

6) Figures in bold italics exceed the ESL Criteria

7) Figures in bold italics that have been underlined exceed the HSLs 'A and B' Criteria

GeoEnviro Consultancy

TABLE 6

Summary of Analytical Results - TRH and VOC

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Prepared by SL Date : 4/12/2019
Checked By:__SG___Date:4/12/2019

Sample	Depths (m)	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ	Total PAHs
TP 1	0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 2	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 3	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 4	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 7	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 8	0.5-0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 10	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 12	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 13	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 14	0.0-0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	0.1
TP 16	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 18	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 21	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 22	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 23	0.6-0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
TP 24	0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
DUP A	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
DUP B	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.05
HBILs 'A' Criteria		**3**															**3***	**300**
HBILs 'C' Criteria																	**3***	**300**
ESL Criteria													**0.7**					

Notes

1) All results are expressed as mg/kg

2) Figures in bold italics exceed the ESL Criteria

3) Figures in bold italics that have been underlined exceed the HBIL 'A' Criteria

* B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products

PAH Species	TEF
Benzo(a)anthracene	0.1
Benzo(a)pyrene	1
Benzo(b+j)fluoranthene	0.1
Benzo(k)fluoranthene	0.1
Benzo(g,h,i)perylene	0.01
Chrysene	0.01
Dibenzo(a,h)anthracene	1
Indeno(1,2,3-c,d)pyrene	0.1

GeoEnviro Consultancy

TABLE 7
Summary of Analytical Results - PAH

JDH Architects
St Francis Catholic College
Jardine Drive Edmondson Park

Prepared By: SL Date: 4/12/2019
Checked By:__SG___Date:4/12/2019

Sample	Depths (m)	Asbestos
TP 1	0-0.1	ND
TP 3	0.1-0.2	ND
TP 4	0.2-0.3	ND
TP 7	0.0-0.1	ND
TP 8	0.5-0.6	ND
TP 10	0.1-0.2	ND
TP 12	0.2-0.3	ND
TP 14	0.0-0.1	ND
TP 16	0.1-0.2	ND
TP 18	0.0-0.1	ND
TP 21	0.2-0.3	ND
TP 23	0.6-0.7	ND
TP 24	0.2-0.3	ND
HBILs 'A' Criteria		**0.01% / 0.001%** [1]
HBILs 'C' Criteria		**0.02% / 0.001%** [1]

Note: ND = Not detected

Measured in %w/w

1) Bonded Asbestos Contaminaint Material / Fiberous Asbestos and Asbestos Fines

2) Figures in bold italics exceed the HBILs 'A' Criteria

GeoEnviro Consultancy

TABLE 8

Summary of Analytical Results - Asbestos

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Prepared By: SL Date: 4/12/2019
Checked By:__SG___Date:4/12/2019

Sample	Depths (m)	Metals							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP 1	0-0.1	5	<0.4	9	23	19	<0.1	10	48
DUP A	-	<4	<0.4	7	32	13	<0.1	7	37
Relative Percentage Difference (RPD)		NA	NA	25.0	32.7	37.5	NA	35.3	25.9

Sample	Depths (m)	OCP	PCB	TRH	BTEX	PAH
TP 1	0-0.1	ND	ND	ND	ND	ND
DUP A	-	ND	ND	ND	ND	ND
Relative Percentage Difference (RPD)		NA	NA	NA	NA	NA

Sample	Depths (m)	Metals							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP 10	0.1-0.2	6	<0.4	11	15	13	<0.1	5	26
DUP B	-	5	<0.4	10	13	15	<0.1	5	24
Relative Percentage Difference (RPD)		18.2	NA	9.5	14.3	14.3	NA	0.0	8.0

Sample	Depths (m)	OCP	PCB	TRH	BTEX	PAH
TP 10	0.1-0.2	ND	ND	ND	ND	ND
DUP B	-	ND	ND	ND	ND	ND
Relative Percentage Difference (RPD)		NA	NA	NA	NA	NA

Notes

1) All results are expressed as mg/kg .

2) ND - Not Detected

3) NA - Not Applicable

GeoEnviro Consultancy

TABLE 9
Summary of Analytical Results - Quality Assurance

JDH Architects

St Francis Catholic College

Jardine Drive Edmondson Park

Prepared by : SL Date: 4/12/2019
Checked By:__SG___Date:4/12/2019

APPENDIX A

Extracts - "Contamination Assessment – Lot 21 in DP 29317, No 150 Jardine Drive, Edmondson Park, NSW" – GeoEnviro Consultancy Pty Ltd reference JC15236A-r1(rev) dated July 2015

GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia
PO Box 1543, Macquarie Centre. North Ryde, NSW 2113
ABN: 62 084 294 762
Tel: (02) 9679 8733
Fax: (02) 9679 8744
Email: geoenviro@exemail.com.au

Report

Contamination Assessment
Proposed School Facilities
Lot 21 in DP 29317, No 150 Jardine Drive, Edmondson Park, NSW

Prepared for

Jenga Star Investments Pty Ltd and
Trustee for the Wollongong Diocese
Catholic School System
PO Box 3250
NORTH STRATHFIELDB NSW 2137

Ref: JC15236A
July 2015

Site Feature	Description
A	Gravel driveway and parking area
B	Dog kennel
C	Concrete driveway path
D	Fibro/Metal and plastic panel shed with concrete floor
E	Metal item storage
F	Concrete driveway path
G	Single storey brick residential dwelling, tile roof
H	Fibro/timber and metal shed on concrete floor
I	Dam
J	Three car brick car garage on concrete floor
K	Metal car port, dirt floor, hydrocarbon staining, with a tractor
L	Brick and metal shed on concrete floor
M	Gravel driveway
N	Previous garden area
O	Metal chicken coup on concrete floor
P	Aluminium shed on concrete floor
Q	Two metal Silos for chicken feed
R	Brick and concrete Pig styes
S	Miscellaneous building items
T	Sand, metal poles
U	Septic tanks
V	Excavation batter
W	Double storey brick and tile residential dwelling with concrete patio surround

Legend

A **Site Feature**

GeoEnviro Consultancy
Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia
Tel: (02) 96798733 Fax: (02) 96798744

Drawn By: SG	Date: 01/07/2015	Jenga Star Investments Pty Ltd	
Checked By: SL	Date: 01/07/2015	No 150 Jardine Drive, Edmondson Park	
Revision By:	Date:	Site Locality and Site Features Plan	
Scale: Proportional	A3	Project No: JC15236A	Drawing No: 1

Legend

TP Test Pit

GeoEnviro Consultancy
Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia
Tel: (02) 96798733 Fax: (02) 96798744

Drawn By: SG	Date:16/06/2015	Jenga Star Investments Pty Ltd No 150 Jardine Drive, Edmondson Park Test Pit Location Plan	
Checked By: SL	Date: 01/07/2015		
Revision By:	Date:		
Scale: Proportional	A3	Project No: JC15236A	Drawing No: 2

Test Pit Number	Depth (m)	Profile Type	Description
1	0-0.35	Topsoil	Clayey Silt, low liquid limit, brown, dry to moist
	0.35-0.6	Natural	(CH) Silty Clay, high plasticity, red brown, with trace ironstone gravel, moist, hard (PP=410kPa)
	0.6-0.8	Natural	(Cl) Gravelly Silty Clay, medium plasticity, brown grey, with tree root, moist
	0.8-1.0	Natural	(Cl) Shaley Clay, medium plasticity, grey, with distinctly weathered shale
	1.0-1.2	Rock	Shale: grey brown, low strength, distinctly weathered, with iron staining
2	0-0.3	Topsoil	Clayey Silt, low liquid limit, brown, dry to moist
	0.3-0.5	Natural	(CH) Silty Clay, high plasticity, red brown, moist
3	0-0.35	Topsoil	Clayey Silt, low liquid limit, brown, dry to moist
	0.35-0.7	Natural	(CH) Silty Clay, high plasticity, red brown, with trace ironstone gravel, moist, very stiff (PP=300kPa)
	0.7-1.1	Natural	(CI-CH) Silty Clay, medium to high plasticity, grey mottled red, moist, hard (PP=420kPa)
	1.1-2.7	Natural	(Cl) Silty Clay, medium plasticity, grey, with trace gravel, dry to moist
	2.7-3.0	Natural	(Cl) Gravelly Silty Clay, medium plasticity, grey, dry to moist
4	0-0.25	Fill	Crushed rock, with brick
	0.25-0.35	Topsoil	Clayey Silt, low liquid limit, brown
	0.35-0.65	Natural	(CH) Silty Clay, high plasticity, red brown, moist
5	0-0.3	Fill	Crushed rock
	0.3-0.5	Natural	(CI-CH) Silty Clay, medium to high plasticity, red mottled grey, moist
6	0-0.3	Natural	(Cl) Silty Clay, medium plasticity, brown, moist to wet
	0.3-0.45	Rock	Shale: dark grey, low to medium strength, distinctly weathered
7	0-0.3	Fill	Crushed rock
	0.3-0.4	Natural	(Cl) Silty Clay, medium plasticity, brown, moist to wet
	0.4-0.6	Natural	(Cl) Silty Clay, medium plasticity, grey mottled brown, moist
8 (mound)	0-0.4	Fill	Clayey Silt, with debris (foam, bricks and nets)
	0.4-0.5	Rock	Shale: dark grey, low to medium strength, distinctly weathered
9	0-0.15	Natural	(Cl) Silty Clay, medium plasticity, brown, moist to wet
	0.15-0.35	Natural	(Cl) Silty Clay, medium plasticity, grey, moist
10	0-0.2	Natural	(Cl) Silty Clay, medium plasticity, brown, wet
	0.2-0.4	Natural	(Cl) Silty Clay, medium plasticity, grey, moist to wet

Note:
PP = Pocket Penetrometer
MC = Moisture Content
PL = Plastic Limit

GeoEnviro Consultancy

TABLE 1 (Page 1 of 4)
SUMMARY OF SOIL PROFILE

Jenga Star Investments Pty Ltd
Proposed School Facilities
No 150 Jardine Drive, Edmondson Park

Test Pit Number	Depth (m)	Profile Type	Description
11	0-0.2	Natural	(Cl) Silty Clay, medium plasticity, brown, wet
	0.2-0.4	Natural	(CH) Silty Clay, high plasticity, red brown, moist
12	0-0.7	Fill	Silty Clay / Clayey Silt, brown
	0.7-0.85	Natural	(Cl) Silty Clay, medium plasticity, grey mottled brown
13	0-0.35	Topsoil	Clayey Silt, low liquid limit, brown, moist
	0.35-0.6	Natural	(CH) Silty Clay, high plasticity, red brown, moist, very stiff (PP=380kPa)
	0.6-1.0	Natural	(Cl) Silty Clay, medium plasticity, grey, wet, very stiff (PP=300kPa)
	1.0-1.3	Natural	(Cl) Silty Clay, medium plasticity, grey, with gravel, dry to moist
	1.3-1.6	Natural	(Cl) Gravelly Silty Clay, medium plasticity, grey, dry to moist
	1.6-1.8	Rock	Shale: grey brown, low strength, distinctly weathered
14	0-0.2	Topsoil	Clayey Silt, low liquid limit, brown, wet
	0.2-0.4	Natural	(Cl) Silty Clay, medium plasticity, grey red, wet
15	0-0.25	Topsoil	Clayey Silt, low liquid limit, brown, dry to moist
	0.25-0.5	Natural	(Cl-CH) Silty Clay, medium to high plasticity, red grey, moist
16	0-0.25	Topsoil	Clayey Silt, low liquid limit, brown, moist
	0.25-0.5	Natural	(CH) Silty Clay, high plasticity, red brown, moist
17	0-0.6	Topsoil	Clayey Silt, low liquid limit, brown, dry
	0.6-1.1	Natural	(CH) Silty Clay, high plasticity, red brown, moist, very stiff (PP=300kPa)
	1.1-2.0	Natural	(Cl) Silty Clay, medium plasticity, grey, moist, very stiff (PP=280kPa)
	2.0-2.5	Natural	(Cl) Silty Clay, medium plasticity, grey, with gravel, dry to moist
	2.5-2.9	Natural	(Cl) Gravelly Silty Clay, medium plasticity, grey, dry
18	0-0.6	Fill	Silty Clay, low to medium plasticity, brown, moist to wet
	0.6-0.8	Topsoil	Clayey Silt, low liquid limit, grey brown, moist to wet
	0.8-1.2	Natural	(CH) Silty Clay, high plasticity, red brown, moist
19	0-0.25	Fill	Crushed rock / road base / asphalt
	0.25-1.8	Fill	Silty Clay, medium plasticity, brown, moist
	1.8-2.2	Topsoil	Clayey Silt, low liquid limit, brown, wet
	2.2-2.5	Natural	(Cl) Silty Clay, medium plasticity, brown, moist to wet

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit

GeoEnviro Consultancy

TABLE 1 (Page 2 of 4)

SUMMARY OF SOIL PROFILE

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Test Pit Number	Depth (m)	Profile Type	Description
20	0-0.6	Topsoil	Clayey Silt, low liquid limit, brown, with boulders and concrete, moist
	0.6-0.9	Natural	(CI) Silty Clay, medium plasticity, grey mottled brown, moist
21	0-0.2	Topsoil	Clayey Silt, low liquid limit, brown, with trace gravel, dry to moist
	0.2-0.4	Natural	(CH) Silty Clay, high plasticity, red brown, moist
22	0-0.4	Fill	Crushed rock / road base / coarse sand
	0.4-0.6	Fill	Silty Clay, low to medium plasticity, brown, dry to moist
	0.6-0.7	Topsoil	Clayey Silt, low liquid limit, brown, with trace gravel, dry to moist
	0.7-1.2	Natural	(CH) Silty Clay, high plasticity, red brown, moist, very stiff (PP=380kPa)
	1.2-1.45	Natural	(CI) Silty Clay, medium plasticity, grey red, with gravel, dry to moist
	1.45-1.8	Natural	(CI) Gravelly Silty Clay, medium plasticity, grey, dry
	1.8-2.0	Rock	Shale: grey brown, low strength, distinctly weathered
23	0-0.3	Fill	Crushed rock / road base
	0.3-0.5	Fill	Silty Clay, medium plasticity, brown, moist
	0.5-0.8	Topsoil	Clayey Silt, low liquid limit, brown, moist
	0.8-1.1	Natural	(CH) Silty Clay, high plasticity, red brown, moist
24	0-0.4	Fill	Silty Clay, medium plasticity, brown grey, dry to moist
	0.4-0.7	Topsoil	Clayey Silt, low liquid limit, brown, moist to wet
	0.7-1.1	Natural	(CI) Silty Clay, medium plasticity, grey, wet
	1.1-1.4	Natural	(CH) Silty Clay, high plasticity, red brown, moist
25	0-0.5	Topsoil	Clayey Silt, low liquid limit, brown, with gravel, dry to moist
	0.5-0.8	Natural	(CH) Silty Clay, high plasticity, red brown, moist
26	0-0.1	Fill	Crushed rock, hydrocarbon stained area (Bobcat parking area)
27	0-0.15	Fill	Topsoil/Fill: Clayey Silt, low liquid limit, brown, moist
	0.15-0.8	Fill	Silty Clay, medium plasticity, grey brown, moist
28	0-0.9	Fill	Silty Clay, medium plasticity, grey brown, moist
	0.9-1.1	Natural	(CI) Silty Clay, medium plasticity, grey red, moist
29	0-1.4	Fill	Gravelly Clayey Silt / Silty Clay, brown, with bricks and concrete, dry to moist
	1.4-1.7	Natural	(CI) Silty Clay, medium plasticity, brown, wet

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit

GeoEnviro Consultancy

TABLE 1 (Page 3 of 4)

SUMMARY OF SOIL PROFILE

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Prepared By: SL 19/12/2017

Checked By:__SG___Date:19/12/2017

Test Pit Number	Depth (m)	Profile Type	Description
30	0-0.4	Fill	Crushed rock / brick
	0.4-0.7	Fill	Silty Clay, medium plasticity, brown, with gravel, with brick
	0.7-0.9	Topsoil	Clayey Silt, low liquid limit, brown, wet
	0.9-1.1	Natural	(CI) Silty Clay, medium plasticity, grey red, moist
31	0-0.4	Fill	Topsoil/Fill: Clayey Silt, low liquid limit, brown, with gravel, with brick, dry to moist
	0.4-0.7	Natural	(CH) Silty Clay, high plasticity, red brown, moist, very stiff (PP=320kPa)
	0.7-1.05	Natural	(CI) Silty Clay, medium plasticity, grey red, moist, very stiff (PP=200kPa)
	1.05-1.15	Rock	Shale: grey brown, low strength, distinctly weathered

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit

GeoEnviro Consultancy

TABLE 1 (Page 4 of 4)

SUMMARY OF SOIL PROFILE

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Sample	Depths (m)	Sample Date	Sample Type	Composite Schedule Depths (m)			Analytes													
							Heavy Metals								OCP	PCB	TRH	BTEX	PAH	Asbestos
							As	Cd	Cr	Cu	Pb	Hg	Ni	Zn						
C1	0.0-0.1	11/06/2015	Soil	TP 2 (0.0-0.1)	TP 3 (0.0-0.1)	TP 13 (0.0-0.1)	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*				
C2	0.0-0.1	11/06/2015	Soil	TP 9 (0.0-0.1)	TP 10 (0.0-0.1)	TP 11 (0.0-0.1)	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*				
C3	0.0-0.1	11/06/2015	Soil	TP 15 (0.0-0.1)	TP 16 (0.0-0.1)	TP 17 (0.0-0.1)	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*				
C4	0.0-0.1	11/06/2015	Soil	TP 14 (0.0-0.1)	TP 18 (0.0-0.1)	TP 21 (0.0-0.1)	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*				
TP 1	0.0-0.1	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*
TP 8	0.0-0.1	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*
TP 19	0.3-0.4	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*
TP 22	0.0-0.1	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*
TP 26	0.0-0.1	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*
TP 29	0.0-0.1	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*
Duplicate A	-	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	
Silt	-	11/06/2015	Soil				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*
DW	-	11/06/2015	Water				*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	*o*	
TP 15	0.0-0.1	11/06/2015	Soil											*o*						
TP 16	0.0-0.1	11/06/2015	Soil											*o*						
TP 17	0.0-0.1	11/06/2015	Soil											*o*						
TP 14	0.0-0.1	11/06/2015	Soil											*o*						
TP 18	0.0-0.1	11/06/2015	Soil											*o*						
TP 21	0.0-0.1	11/06/2015	Soil											*o*						

Note: O denotes tested

GeoEnviro Consultancy

TABLE 2

Analytical Program

Jenga Star Investments Pty Ltd
Proposed School Facilities
No 150 Jardine Drive, Edmondson Park

Composite Sample

Sample	Depths (m)	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
C1	0.0-0.1	7	<0.4	16	19	23	<0.1	11	57
C2	0.0-0.1	9	<0.4	13	30	18	<0.1	9	110
C3	0.0-0.1	9	<0.4	16	32	23	<0.1	13	*150*
C4	0.0-0.1	7	<0.4	14	38	24	<0.1	15	*140*
Modified HBILs 'A' Criteria		***33***	***7***	***33 (VI)***	***200***	***100***	***13***	***133***	***2467***
Modified EIL Criteria*		***36***		***88***	***53***	***374***		***61***	***128***

Individual Samples

Sample	Depths (m)	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP 1	0.0-0.1	6	<0.4	13	9	20	<0.1	5	31
TP 8	0.0-0.1	6	<0.4	7	44	39	<0.1	13	*620*
TP 19	0.3-0.4	7	<0.4	8	27	15	<0.1	4	35
TP 22	0.0-0.1	<4	<0.4	4	22	19	<0.1	8	47
TP 26	0.0-0.1	<4	<0.4	5	66	13	<0.1	6	77
TP 29	0.0-0.1	13	0.4	44	58	53	<0.1	34	260
Duplicate A	-	6	<0.4	14	10	19	<0.1	5	33
Silt	-	9	<0.4	16	25	18	<0.1	9	37
TP 15	0.0-0.1								18
TP 16	0.0-0.1								18
TP 17	0.0-0.1								16
TP 14	0.0-0.1								31
TP 18	0.0-0.1								28
TP 21	0.0-0.1								14
HBILs 'A' Criteria		***100***	***20***	***100 (VI)***	***600***	***300***	***40***	***400***	***7400***
EIL Criteria*		***108***	***NA***	***265***	***159***	***1122***	***NA***	***182***	***385***

EIL Derivation

ABC[3]	***8***	***NA***	***15***	***29***	***22***	***NA***	***12***	***115***
ACL[4]	***100***	***NA***	***250***	***130***	***1100***	***NA***	***170***	***270***

Notes

1) All results are expressed as mg/kg and pH (units).

2) Figures in bold italics that are underlined exceed the modified HBILs 'A' or HBIL 'A' Criteria

3) Figures in bold italics exceed the modified EIL or EIL Criteria

3) Ambient Background Concentrations

4) Added Contaminant Limits

GeoEnviro Consultancy

TABLE 3
Summary of Analytical Results - Heavy Metals

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Prepared By: SL Date: 19/12/2017
Checked By:__SG___Date:19/12/2017

Composite Sample

Sample	Depths (m)	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-chlordane	Endosulfan I	pp-DDE	Dieldrin	Endrin	pp-DDD	Endosulfan II	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor	Total OCP
C1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
C2	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
C3	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
C4	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Modified HBILs 'A' Criteria		***3***				***2***		***2***		***17***		***90***	***80***	***2***	***3***	***80***		***80***			***100***	

Individual Sample

Sample	Depths (m)	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-chlordane	Endosulfan I	pp-DDE	Dieldrin	Endrin	pp-DDD	Endosulfan II	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor	Total OCP
TP 1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 8	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 19	0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 22	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 26	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 29	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Duplicate A	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Silt	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
HBILs 'A' Criteria		***10***				***6***		***6***		***50***		***270***	***240***	***6***	***10***	***240***		***240***			***300***	

Notes

1) All results are expressed as mg/kg and pH (units).

2) Figures in bold italics exceed the modified HBILs 'A' or HBIL 'A' Criteria

GeoEnviro Consultancy

TABLE 4
Summary of Analytical Results - OCP

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Prepared by: SL Date: 19/12/2017
Checked By:__SG___Date:19/12/2017

Composite Sample

Sample	Depths (m)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
C1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
C2	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
C3	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
C4	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Modified HBILs 'A' Criteria									***0.3***

Individual Sample

Sample	Depths (m)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
TP 1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 8	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1
TP 19	0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 22	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 26	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP 29	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Duplicate A	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Silt	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
HBILs 'A' Criteria									***1***

Notes

1) All results are expressed as mg/kg and pH (units).

2) Figures in bold italics exceed the modified HBILs 'A' or HBIL 'A' Criteria

GeoEnviro Consultancy

TABLE 5
Summary of Analytical Results - PCB

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Sample	Depths (m)	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	C_{10}-C_{36}	F1 [4] C_6-C_{10}	F2 [5] $>C_{10}$-C_{16}	F3 C_{16}-C_{34}	F4 C_{34}-C_{40}	Volatile Organic Compounds (VOC)					
											Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene
TP 1	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 8	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 19	0.3-0.4	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 22	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP 26	0.0-0.1	<25	2100	47000	1200	***50300***	<25	***12000***	***38000***	670	<0.2	<0.5	<1	<2	<1	<1
TP 29	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
Duplicate A	-	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
Silt	-	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
NSW DEC (1994)		***65***				***1000***					***1***	***1.4***	***3.1***	***14***		
HSLs 'A and B' Criteria (CLAY)	***0m to <1m***						***50***	***280***			***0.7***	***480***	***480***	***110***		***5***
	1m to <2m						***90***				***1***			***310***		
	2m to < 4m						***150***				***2***					
	4m+						***290***				***3***					
ESL Criteria							***180***	***120***	***1300***	***5600***	***65***	***105***	***125***	***45***		

Notes

1) All results are expressed as mg/kg unless otherwise specified

2) Figures in bold exceed the NSW DEC criteria

3) ND Not detected

4) F1 is C_6-C_{10} minus the sum of the BTEX concentrations

5) F2 is $>C_{10}$-C_{16} Minus Napthalene

6) Figures in bold italics that have been underlined exceed the HSLs 'A and B' Criteria

7) Figures in bold italics exceed the ESL Criteria

GeoEnviro Consultancy

TABLE 6

Summary of Analytical Results - TRH and VOC

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Sample	Depths (m)	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ	Total PAHs
TP 1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.8
TP 8	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.8
TP 19	0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.8
TP 22	0.0-0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	0.25
TP 26	0.0-0.1	<1	1.2	3.7	11	15	12	7.3	130	<1	1.4	<2	<0.5	<1	<1	<1	<0.6	180
TP 29	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.8
Duplicate A	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.8
Silt	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	<0.8
HBILs 'A' Criteria		***3***															***3****	***300***
ESL Criteria													0.7					

Notes

1) All results are expressed as mg/kg

2) Figures in bold italics that have been underlined exceed the HBILs 'A' Criteria

3) Figures in bold italic exceed the ESL Criteria

* B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products

PAH Species	***TEF***
Benzo(a)anthracene	0.1
Benzo(a)pyrene	1
Benzo(b+j)fluoranthene	0.1
Benzo(k)fluoranthene	0.1
Benzo(g,h,i)perylene	0.01
Chrysene	0.01
Dibenzo(a,h)anthracene	1
Indeno(1,2,3-c,d)pyrene	0.1

GeoEnviro Consultancy

TABLE 7
Summary of Analytical Results - PAH

Jenga Star Investments Pty Ltd
Proposed School Facilities
No 150 Jardine Drive, Edmondson Park

Sample	Depths (m)	Asbestos
TP 1	0.0-0.1	ND
TP 8	0.0-0.1	ND
TP 19	0.3-0.4	ND
TP 22	0.0-0.1	ND
TP 26	0.0-0.1	ND
TP 29	0.0-0.1	ND
Silt	-	ND
HBILs 'A' Criteria		***0.01% / 0.001%*** [1]

Note: ND = Not detected

Measured in %w/w

1) Bonded Asbestos Contaminaint Material / Fiberous Asbestos and Asbestos Fines

2) Figures in bold italics exceed the HBILs 'A' Criteria

GeoEnviro Consultancy

TABLE 8

Summary of Analytical Results - Asbestos

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Sample	Depths (m)	Metals							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP 1	0.00-0.10	6	<0.4	13	9	20	<0.1	5	31
Duplicate A		6	<0.4	14	10	19	<0.1	5	33
Relative Percentage Difference (RPD)		0.0	NA	7.4	10.5	5.1	NA	0.0	6.3

Sample	Depths (m)	OCP	PCB	TRH	BTEX	PAH
TP 1	0.00-0.10	ND	ND	ND	ND	ND
Duplicate A		ND	ND	ND	ND	ND
Relative Percentage Difference (RPD)		NA	NA	NA	NA	NA

Notes

1) All results are expressed as mg/kg .

2) ND - Not Detected

3) NA - Not Applicable

GeoEnviro Consultancy

TABLE 9
Summary of Analytical Results - Quality Assurance

Jenga Star Investments Pty Ltd

Proposed School Facilities

No 150 Jardine Drive, Edmondson Park

Sample	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
DW	<1	0.4	<1	7	<1	<0.05	2	8
ANZECC Water Quality Guidelines-2000	24/13[3]	0.2	1[4]		3.4	0.6	11	8

Notes

1) All results are expressed as µg/L.

2) Figures in bold exceeds ANZECC Guidelines for Water Quality 2000 for protection of 95% of species

3) As III/As V

4) Cr VI

GeoEnviro Consultancy

TABLE 10

Summary of Analytical Results (Dam water) - Heavy Metals

Jenga Star Investments Pty Ltd
Proposed School Facilities
No 150 Jardine Drive, Edmondson Park

Sample	OCP						OPP						PCB
	Heptachlor	Endrin	gamma-Chlordane	alpha-Chlordane	DDT	Others	Dimethoate	Diazinon	Fenitronthion	Malathion	Chlorphyriphos	Others	
DW	<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
ANZECC Water Quality Guidelines-2000	0.09	0.02	0.08		0.01	ID	0.15	0.01	0.2	0.05	0.01	ID	0.6/0.03[3]

Notes

1) All results are expressed as µg/L.

2) Figures in bold exceeds ANZECC Guidelines for Water Quality 2000 for protection of 95% of species

3) Aroclor 1242/Aroclor 1254

GeoEnviro Consultancy

TABLE 11

Summary of Analytical Results (Dam water) - OCP/ OPP/ PCB

Jenga Star Investments Pty Ltd
Proposed School Facilities
No 150 Jardine Drive, Edmondson Park

Sample	BTEX									PAH
	Benzene	Toluene	EthylBenzene	m+p-Xylene	o-Xylene	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	
DW	<1	<1	<1	<2	<1	<10	<50	<100	<100	<1
ANZECC Water Quality Guidelines-2000	950	ID	ID	350	200					16[3]

Notes

1) All results are expressed as µg/L.

2) Figures in bold exceeds ANZECC Guidelines for Water Quality 2000 for protection of 95% of species

3) Naphathelene

GeoEnviro Consultancy

TABLE 12

Summary of Analytical Results (Dam water) - BTEX/ TRH/ PAH

Jenga Star Investments Pty Ltd
Proposed School Facilities
No 150 Jardine Drive, Edmondson Park

Sample	Total Dissolve Solids (mg/L)	Turbidity (NTU)	Cl (mg/L)	SO4 (mg/L)	Nitrate (mg/L)	Total Phosphorus	TKN (mg/L)	Ec (uS/cm)
DW	460	52	30	25	42	0.2	5.9	630
ANZECC Water Quality Guidelines-2000					700	50		2200

Notes

1) All results are expressed as µg/L.

2) Figures in bold exceeds ANZECC Guidelines for Water Quality 2000 for protection of 95% of species

GeoEnviro Consultancy

TABLE 13

Summary of Analytical Results (Dam water) - Indicator Parameters

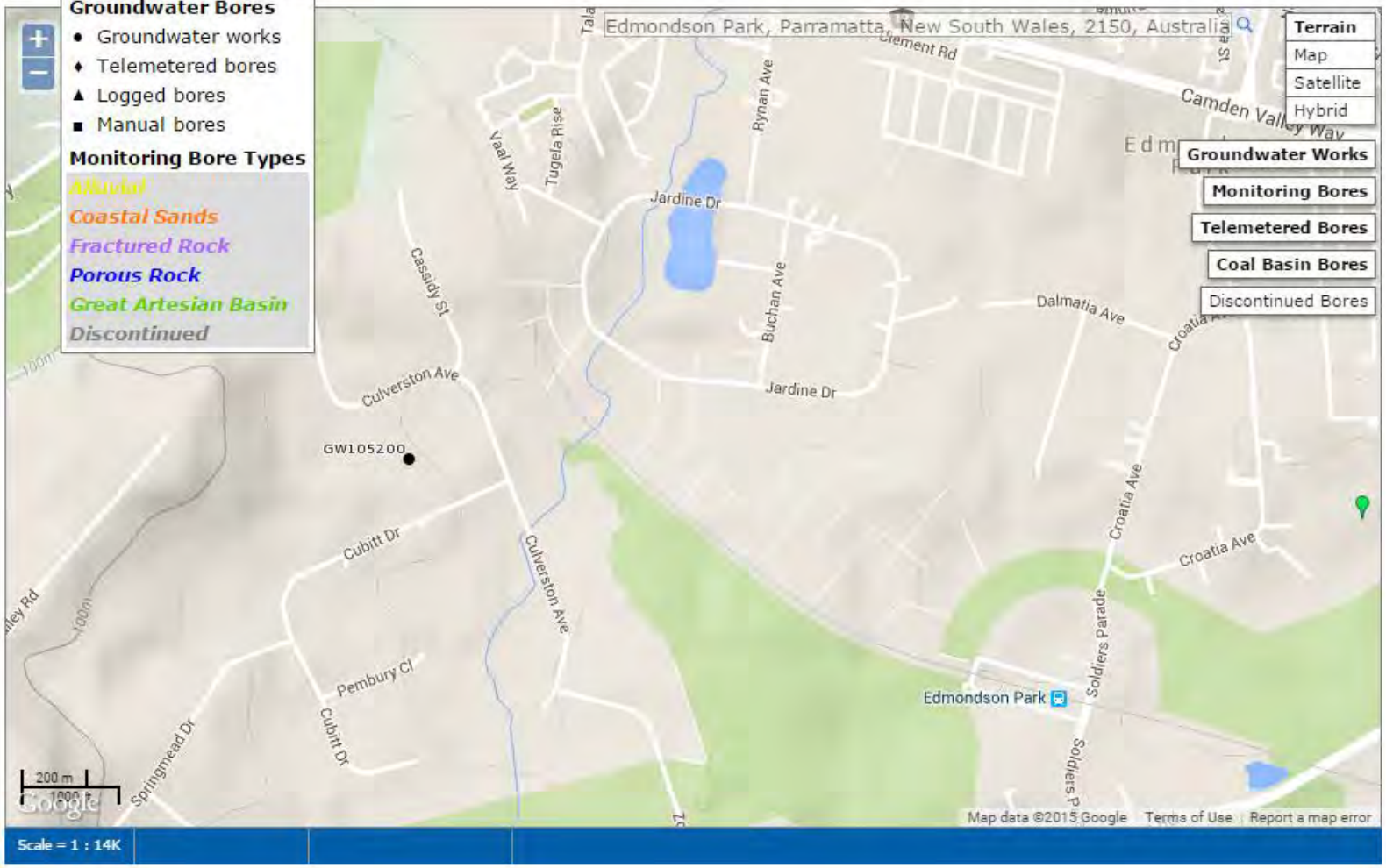
Jenga Star Investments Pty Ltd
Proposed School Facilities
No 150 Jardine Drive, Edmondson Park

All Groundwater

All Groundwater Map

All data times are Eastern Standard Time

Map | Info



Scale = 1 : 14K

Contaminated land

+ Management of contaminated land
+ Consultants and site auditor scheme
+ Underground petroleum storage systems
Guidelines under the CLM Act
NEPM amendment
+ Further guidance
– Record of notices
About the record
Search the record
Search tips
Disclaimer
List of NSW contaminated sites notified to EPA
Frequently asked questions
Forms
+ Other contamination issues

Home > Contaminated land > Record of notices

Search results

Your search for: Text: Contaminated Land Management Act 1997
LGA: Liverpool City Council
Date from: 01 Jan 1997

Search Again | Refine Search

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

See What's in the record and What's not in the record.

Contaminated land

+ Management of contaminated land
+ Consultants and site auditor scheme
+ Underground petroleum storage systems
Guidelines under the CLM Act
NEPM amendment
+ Further guidance
– Record of notices
About the record
Search the record
Search tips
Disclaimer
List of NSW contaminated sites notified to EPA
Frequently asked questions
Forms
+ Other contamination issues

Home > Contaminated land > Record of notices

Search results

Your search for: Text: Environmentally Hazardous Chemicals Act 1985
LGA: Liverpool City Council
Date from: 01 Jan 1985

Search Again | Refine Search

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

See What's in the record and What's not in the record.

APPENDIX B

"Preliminary Site Investigation – 130, 132, 160 and 170 Jardine Drive Edmondson Park" – GHD reference 21/23862 dated April 2015

0 20 40 60 80 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Site Boundary (Approximate)
- Cadastre / Lot Boundaries

Catholic Education Office - Diocese of Wollongong
Limited Phase 2 Environmental Investigation
Lots 130, 132, 160 and 170
Jardine Drive, Edmondson Park, NSW

Job Number	21-23862
Revision	A
Date	22 Aug 2014

Site Location Plan

Figure 1

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

0 10 20 30 40 50
Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Site Boundary (Approximate)
- Cadastre / Lot Boundaries
- Soil Borehole Location (GHD, 2014)

Catholic Education Office - Diocese of Wollongong
Limited Phase 2 Environmental Investigation
Lots 130, 132, 160 and 170
Jardine Drive, Edmondson Park, NSW

Job Number	21-23862
Revision	A
Date	17 Sep 2014

Site Layout and Sampling Location Plan - Site 1

Figure 2

G:\21\23862\GIS\Maps\Deliverables\21_23862_Z002_EDMONDSON_SiteLayoutPlan_Site1.mxd

Data Source: NSW Department of Lands: Cadastre - Jan 2011; Geoscience Australia: 250k Data - Jan 2011, Imagery - Google Earth Pro 2012 (Retrieved 19-08-2014). Created by: tnham

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

0 10 20 30 40
Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Site Boundary (Approximate)
- Cadastre / Lot Boundaries
- Soil Borehole Location (GHD, 2014)

Catholic Education Office - Diocese of Wollongong
Limited Phase 2 Environmental Investigation
Lots 130, 132, 160 and 170
Jardine Drive, Edmondson Park, NSW

Job Number	21-23862
Revision	A
Date	17 Sep 2014

Site Layout and Sampling Location Plan - Site 2

Figure 3

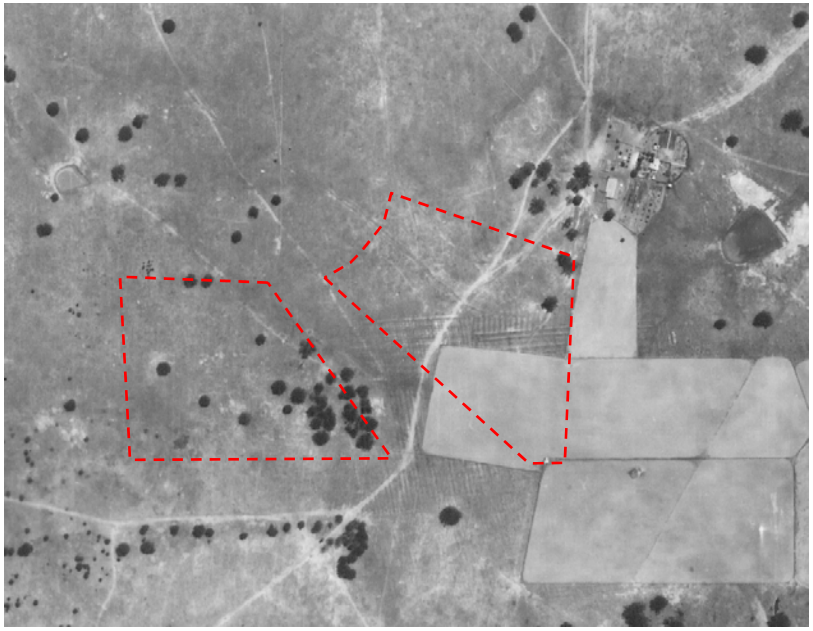
G:\21\23862\GIS\Maps\Deliverables\21_23862_Z003_EDMONDSON_SiteLayoutPlan_Site2.mxd

Data Source: NSW Department of Lands: Cadastre - Jan 2011; Geoscience Australia: 250k Data - Jan 2011, Imagery - Google Earth Pro 2012 (Retrieved 19-08-2014). Created by: tnham

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

1947

Estimated site location



Right: full photograph provided.
Above: close up of site

North

1956

Estimated site location

Right: full photograph provided.
Above: close up of site

North

1965

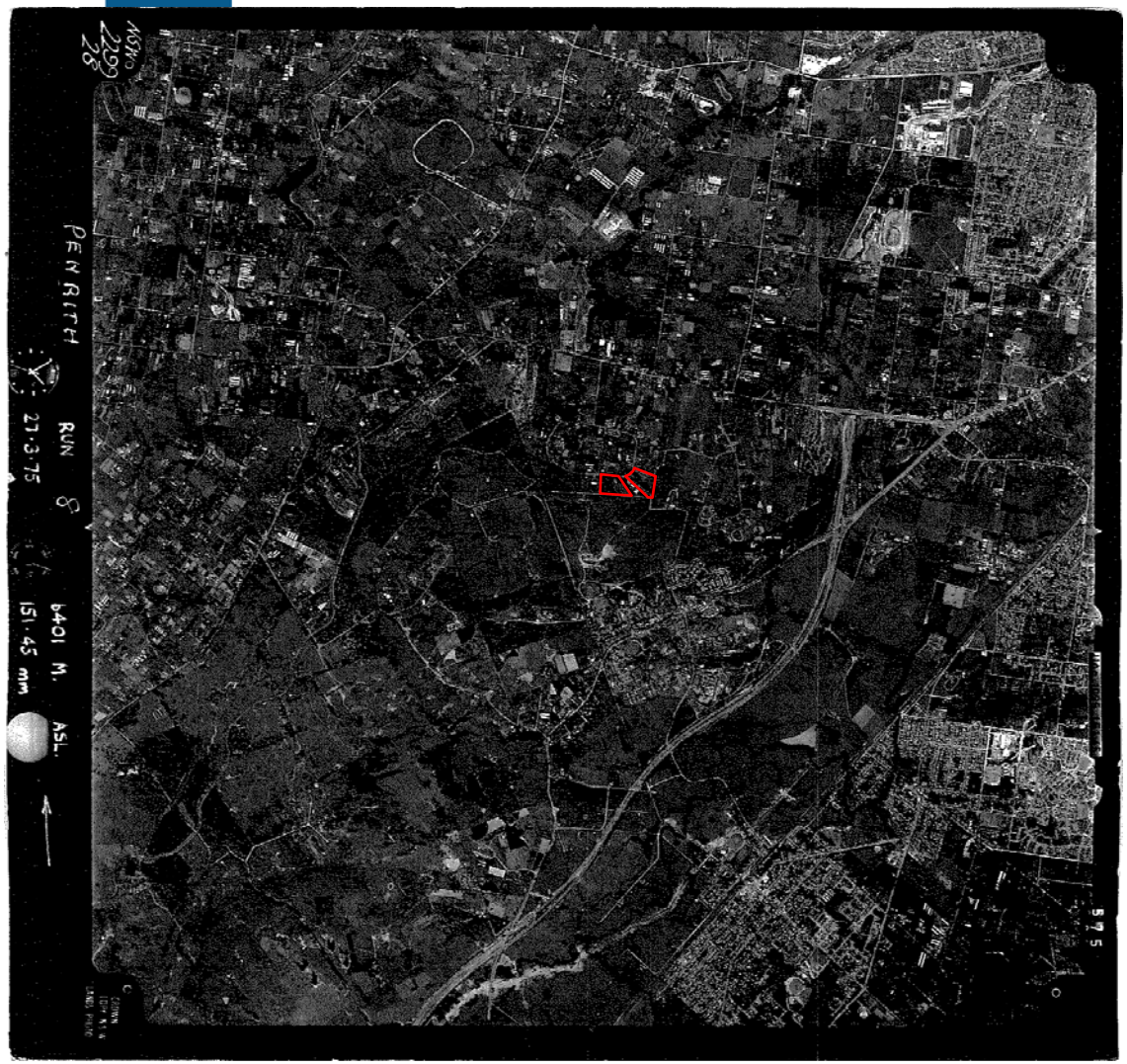
Approximate site location

Left: full photograph provided.
Above: close up of site

North

1975

Approximate site location

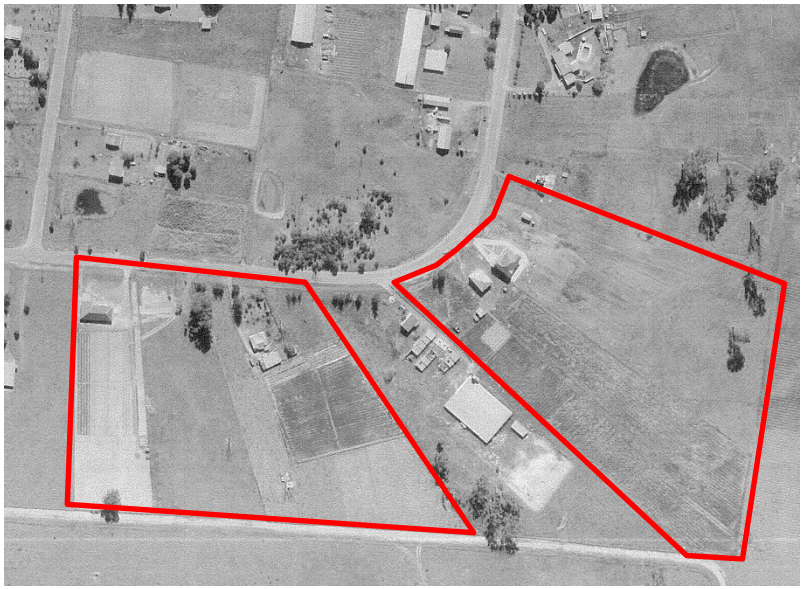


Left: full photograph provided.
Above: close up of site

North

1978

Approximate site location



Left: full photograph provided.
Above: close up of site

North

1986

Approximate site location

Left: full photograph provided.
Above: close up of site

North

1998

Approximate site location

Left: full photograph provided.
Above: close up of site

North

2005

Approximate site location

Left: full photograph provided.
Above: close up of site

North

2009 (Current)

Approximate site location

Left: full photograph provided.
Above: close up of site

North

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

P.O. Box 149
Yagoona NSW 2199

Telephone: +612 9664 1679
Mobile: 0412 169 809
Facsimile: +612 8076 3026
Email: alsearch@optusnet.com.au

15th August, 2014

GHD
Level 15, 133 Castlereagh Street,
SYDNEY NSW 2000

Attention: Amy Dodson,

RE: **130, 132, 160 & 170 Jardine Drive,**
Edmondson Park
Reference 2123862

Note 1:

Current Search

Folio Identifier 19/29317 (title attached)
DP 29317 (plan attached)
Dated 12th August, 2014
Registered Proprietor:
THE TRUSTEES OF THE ROMAN CATHOLIC CHURCH FOR THE ARCHDIOCESE OF SYDNEY

Title Tree
Lot 19 DP 29317

Folio Identifier 19/29317

Certificate of Title Volume 12929 Folio 167

IVA 17533

Conveyance Book 3198 No. 848

Conveyance Book 2997 No. 910

Conveyance Book 2425 No. 667

Conveyance Book 2417 No. 498

Conveyance Book 2266 No. 160

Conveyance Book 1969 No. 998

Conveyance Book 1801 No. 581

****

Summary of proprietor(s)
Lot 19 DP 29317

Year	Proprietor
	(Lot 19 DP 29317)
2013 – todate	The Trustees of the Roman Catholic Church for the Archdiocese of Sydney
2011 – 2013	Anna Teresa Testore
1988 – 2011	Pietro Testore Anne Teresa Testore
	(Lot 19 DP 29317 – CTVol 12929 Fol 167)
1976 – 1988	Pietro Testore, farmer Anne Teresa Testore
1975 – 1976	John Peter Testore, mechanic
	(Lot 19 DP 29317 Parish of Minto – Area 4 Acres 3 Roods 23 Perches - Conv Bk 3198 No. 848)
1975 – 1975	John Peter Testore, mechanic
1972 – 1975	Laurence Arthur Southion, builder / executor Laurel Iris Southion, estate
	(Lot 19 DP 29317 Parish of Minto – Area 4 Acres 3 Roods 23 Perches – Conv Bk 2997 No. 910)
1965 – 1972	Laurel Iris Southion, married woman
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2425 No. 667)
1957 – 1965	East Australia Construction Company Pty Limited
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2417 No. 498)
1957 – 1957	Norman Rutherford Lenehan
	(Part Lot 2 DP 155829 – Area 264 Acres 3 Roods 12 ¾ Perches – Conv Bk 2266 No. 160)
1953 – 1957	Vincent Fazzari, dairyman Ralph Nicholas Fazzari, dairyman John Joseph Fazzari, dairyman Julius Carmel Fazzari, dairyman
	(Part Portion 63, Parish of Minto – Area 400 Acres 0 Roods 1 Perch – Conv Bk 1969 No. 998)
1945 – 1953	Harold Alfred Swane, market gardener
	(Portion 63 Parish of Minto, – Area 840 Acres – Conv Bk 1801 No. 581)
1937 – 1945	Annie Shepherd, wife of farmer
1932 – 1937	Charles Henry Thorsby, grazier / executor Charles Thorsby, estate
1854 – 1932	Charles Henry Thorsby, grazier / executor Archer Broughton Thorsby, grazier / executor Charles Thorsby, estate

Note 2:

Current Search

Folio Identifier 20/29317 (title attached)
DP 29317 (plan attached)
Dated 12th August, 2014
Registered Proprietor:
THE TRUSTEES OF THE ROMAN CATHOLIC CHURCH FOR THE ARCHDIOCESE OF SYDNEY

Title Tree
Lot 20 DP 29317

Folio Identifier 20/29317

Certificate of Title Volume 11905 Folio 91

IVA 10124

Conveyance Book 3049 No. 540

Conveyance Book 2931 No. 355

Conveyance Book 2865 No. 465

Conveyance Book 2775 No. 959

Conveyance Book 2467 No. 698

Conveyance Book 2425 No. 667

Conveyance Book 2417 No. 498

Conveyance Book 2266 No. 160

Conveyance Book 1969 No. 998

Conveyance Book 1801 No. 581

****

Summary of proprietor(s)
Lot 20 DP 29317

Year	Proprietor
	(Lot 20 DP 29317)
2013 – todate	The Trustees of the Roman Catholic Church for the Archdiocese of Sydney
2011 – 2013	Anna Teresa Testore
1988 – 2011	Pietro Testore Anne Teresa Testore
	(Lot 20 DP 29317 – CTVol 11905 Fol 91)
1972 – 1988	Pietro Testore, market gardener Anne Teresa Testore
	(Lot 20 DP 29317 – Area 4 Acres 3 Roods 37 Perches – Conv Bk 3049 No 540)
1972 – 1972	Pietro Testore, market gardener Anne Teresa Testore
	(Lot 20 DP 29317 – Area 4 Acres 3 Roods 37 Perches – Conv Bk 2931 No 355)
1969 – 1972	Luigi Varacalli, labourer / farmer
	(Lot 20 DP 29317 – Area 4 Acres 3 Roods 37 Perches – Conv Bk 2865 No 465)
1967 – 1969	Dino Giusti, labourer
	(Lot 20 DP 29317 – Area 4 Acres 3 Roods 37 Perches – Conv Bk 2775 No 959)
1964 – 1967	Lajos Csik, floor layer
	(Lot 20 DP 29317 – Area 4 Acres 3 Roods 37 Perches – Conv Bk 2467 No 698)
1961 – 1964	Terenty Sachnav, driver Anna Sachnav
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2425 No. 667)
1957 – 1961	East Australia Construction Company Pty Limited
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2417 No. 498)
1957 – 1957	Norman Rutherford Lenehan

Cont.

Cont.

	(Part Lot 2 DP 155829 – Area 264 Acres 3 Roods 12 ¾ Perches – Conv Bk 2266 No. 160)
1953 – 1957	Vincent Fazzari, dairyman Ralph Nicholas Fazzari, dairyman John Joseph Fazzari, dairyman Julius Carmel Fazzari, dairyman
	(Part Portion 63, Parish of Minto – Area 400 Acres 0 Roods 1 Perch – Conv Bk 1969 No. 998)
1945 – 1953	Harold Alfred Swane, market gardener
	(Portion 63 Parish of Minto, – Area 840 Acres – Conv Bk 1801 No. 581)
1937 – 1945	Annie Shepherd, wife of farmer
1932 – 1937	Charles Henry Thorsby, grazier / executor Charles Thorsby, estate
1854 – 1932	Charles Henry Thorsby, grazier / executor Archer Broughton Thorsby, grazier / executor Charles Thorsby, estate

****

Note 3:

Current Search

Folio Identifier 22/29317 (title attached)
DP 29317 (plan attached)
Dated 12th August, 2014
Registered Proprietor:
ISIDORO RUSSO
LEONARDA RUSSO

Title Tree
Lot 22 DP 29317

Folio Identifier 22/29317

Certificate of Title Volume 13405 Folio 124

IVA 40578

Conveyance Book 2606 No. 956

Conveyance Book 2425 No. 667

Conveyance Book 2417 No 498

Conveyance Book 2266 No. 160

Conveyance Book 1969 No. 998

Conveyance Book 1801 No. 581

****

Summary of proprietor(s)
Lot 22 DP 29317

Year	Proprietor
	(Lot 22 DP 29317)
1988 – todate	Isidoro Russo Leonarda Russo
	(Lot 22 DP 29317 – CTVol 13405 Fol 124)
1986 – 1988	Isidoro Russo Leonarda Russo
1984 – 1986	Francesco Mezzasalma Maria D'Amico Salvatore Mezzasalma Giuseppe Mezzasalma
1977 – 1984	Commonwealth Trading Bank of Australia Alfredo Mezzasalma, process worker
	(Lot 22 DP 29317 , Parish of Minto – Area 5 Acres) Roods 4 ¾ Perches – Conv Bk 2606 No. 956)
1962 – 1977	Alfredo Mezzasalma, process worker
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2425 No. 667)
1957 – 1962	East Australia Construction Company Pty Limited
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2417 No. 498)
1957 – 1957	Norman Rutherford Lenehan
	(Part Lot 2 DP 155829 – Area 264 Acres 3 Roods 12 ¾ Perches – Conv Bk 2266 No. 160)
1953 – 1957	Vincent Fazzari, dairyman Ralph Nicholas Fazzari, dairyman John Joseph Fazzari, dairyman Julius Carmel Fazzari, dairyman
	(Part Portion 63, Parish of Minto – Area 400 Acres 0 Roods 1 Perch – Conv Bk 1969 No. 998)
1945 – 1953	Harold Alfred Swane, market gardener
	(Portion 63 Parish of Minto, – Area 840 Acres – Conv Bk 1801 No. 581)
1937 – 1945	Annie Shepherd, wife of farmer
1932 – 1937	Charles Henry Thorsby, grazier / executor Charles Thorsby, estate
1854 – 1932	Charles Henry Thorsby, grazier / executor Archer Broughton Thorsby, grazier / executor Charles Thorsby, estate

****

Note 4:

Current Search

Folio Identifier 23/29317 (title attached)
DP 29317 (plan attached)
Dated 12th August, 2014
Registered Proprietor:
TONY FRANK MOSCA
MARIA GIUSEPPINA MOSCA

Title Tree
Lot 23 DP 29317

Folio Identifier 23/29317

Certificate of Title Volume 13422 Folio 118

IVA 24953

Conveyance Book 3280 No. 358

Acknowledgment Book 3228 No. 320

Conveyance Book 2606 No. 932

Conveyance Book 2425 No. 667

Conveyance Book 2417 No. 498

Conveyance Book 2266 No. 160

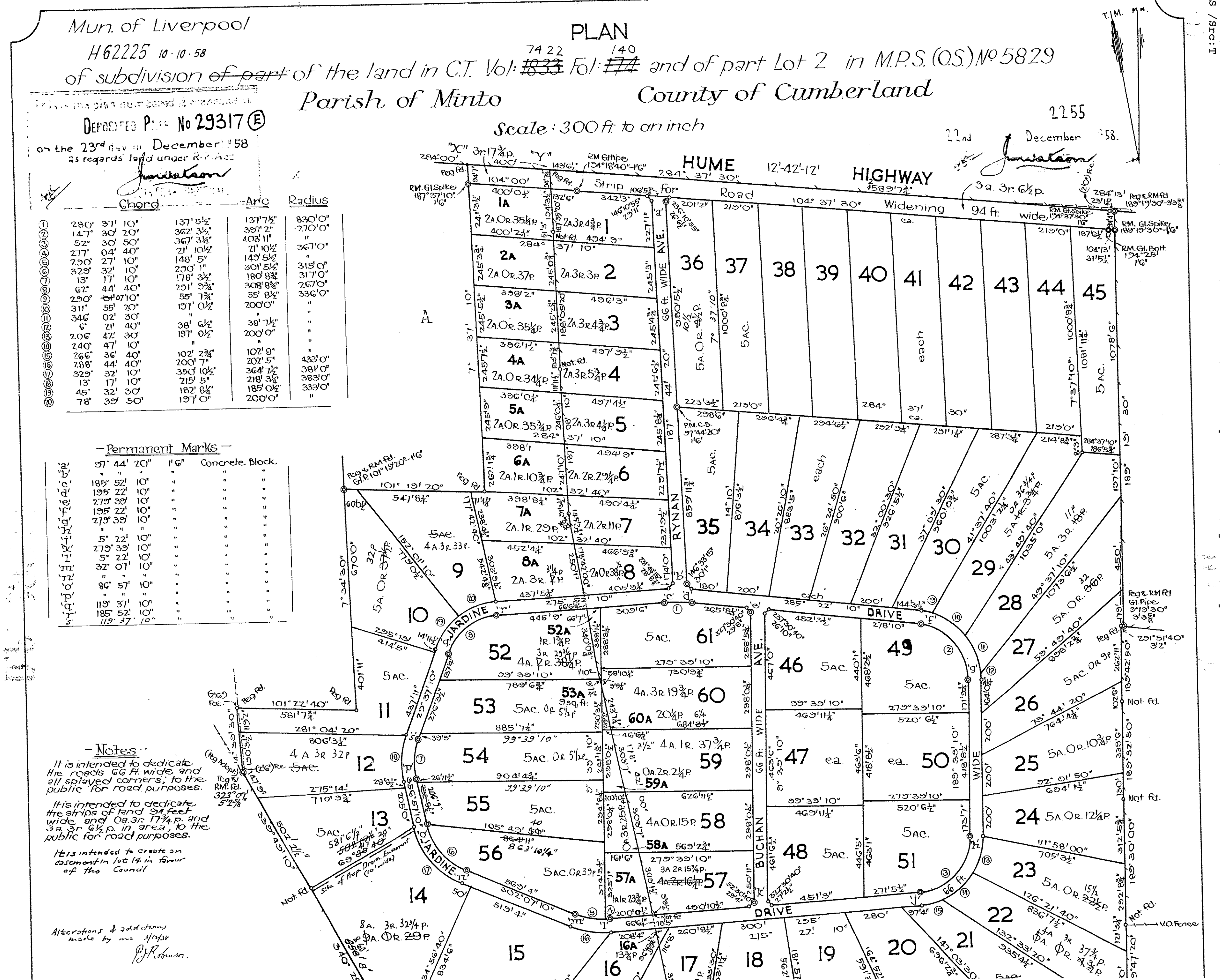
Conveyance Book 1969 No. 998

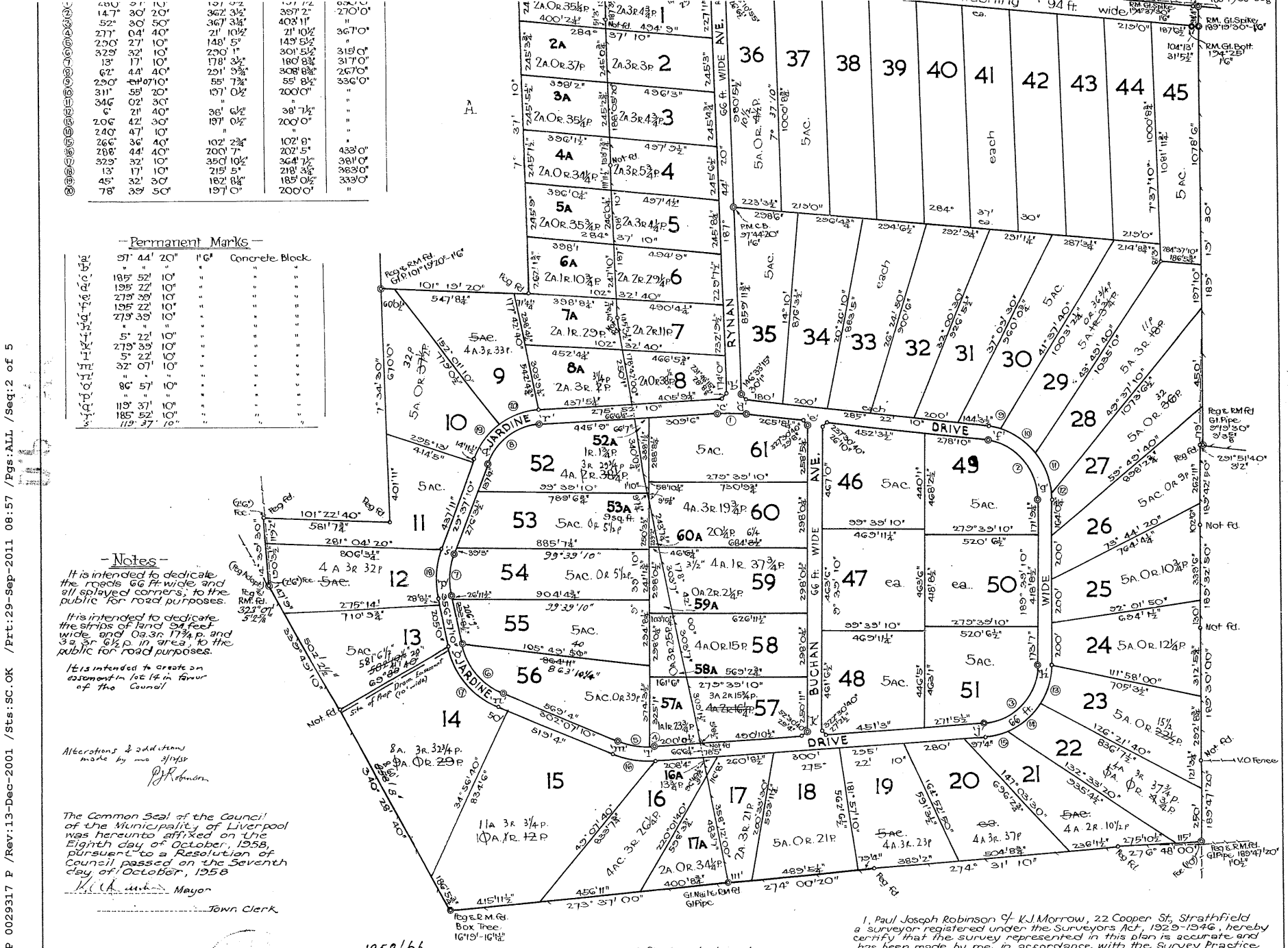
Conveyance Book 1801 No. 581

****

Summary of proprietor(s)
Lot 23 DP 29317

Year	Proprietor
	(Lot 23 DP 29317)
1988 – todate	Tony Frank Mosca Maia Giuseppina Mosca
	(Lot 23 DP 29317 – CTVol 13422 Fol 118)
1981 – 1988	Tony Frank Mosca, dental surgeon Maia Giuseppina Mosca
1977 – 1980	The Commercial Banking Company of Sydney Limited Tedros Nader, service station proprietor Noele Nader
	(Lot 23 DP 29317 , Parish of Minto – Area 5 Acres 0 Roods 22 ½ Perches – Conv Bk 3280 No. 358)
1977 – 1977	Tedros Nader, service station proprietor Noele Nader
	(Lot 23 DP 29317, Parish of Minto – Area 5 Acres 0 Roods 22 ½ Perches – Ackn Bk 3228 No 320)
1976 – 1977	Mary Alchin, married woman Steve Balla, engineer
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2425 No. 667)
1957 – 1976	East Australia Construction Company Pty Limited
	(Part Lot 2 DP 155829 – Area 236 Acres 0 Roods 38 Perches – Conv Bk 2417 No. 498)
1957 – 1957	Norman Rutherford Lenehan
	(Part Lot 2 DP 155829 – Area 264 Acres 3 Roods 12 ¾ Perches – Conv Bk 2266 No. 160)
1953 – 1957	Vincent Fazzari, dairyman Ralph Nicholas Fazzari, dairyman John Joseph Fazzari, dairyman Julius Carmel Fazzari, dairyman
	(Part Portion 63, Parish of Minto – Area 400 Acres 0 Roods 1 Perch – Conv Bk 1969 No. 998)
1945 – 1953	Harold Alfred Swane, market gardener
	(Portion 63 Parish of Minto, – Area 840 Acres – Conv Bk 1801 No. 581)
1937 – 1945	Annie Shepherd, wife of farmer
1932 – 1937	Charles Henry Thorsby, grazier / executor Charles Thorsby, estate
1854 – 1932	Charles Henry Thorsby, grazier / executor Archer Broughton Thorsby, grazier / executor Charles Thorsby, estate


Mun. of Liverpool
H62225 10·10·58
PLAN
of subdivision of part of the land in C.T. Vol: 7422 Fol: 140 and of part Lot 2 in M.P.S.(O.S.) No 5829
Parish of Minto
County of Cumberland
Scale: 300 ft. to an inch
DEPOSITED PLAN No 29317 (E)
on the 23rd day of December 1958
as regards land under R.P. Act
2255
22nd December 1958.
HUME HIGHWAY
Strip for Road Widening 94 ft. wide
RYNAN 66 ft. WIDE AVE.
BUCHAN 66 ft. WIDE AVE.
JARDINE DRIVE
Chord
Arc
Radius
Permanent Marks
Concrete Block
Notes
It is intended to dedicate the roads 66 ft. wide and all splayed corners, to the public for road purposes.
It is intended to dedicate the strips of land 94 feet wide and 0a.3r. 17¾p. and 3a. 3r. 6½p. in area, to the public for road purposes.
It is intended to create an easement in lot 14 in favour of the Council
Alterations & additions made by me 3/12/58
P.J. Robinson



'a'	97°	44'	20"	1" G.I.	Concrete Block	
'b'	"	"	"	"	"	"
'c'	195°	52'	10"	"	"	"
'd'	195°	22'	10"	"	"	"
'e'	279°	39'	10"	"	"	"
'f'	195°	22'	10"	"	"	"
'g'	279°	39'	10"	"	"	"
'g1'	"	"	"	"	"	"
'h'	5°	22'	10"	"	"	"
'k'	279°	39'	10"	"	"	"
'l'	5°	22'	10"	"	"	"
'm'	32°	07'	10"	"	"	"
'n'	"	"	"	"	"	"
'o'	86°	57'	10"	"	"	"
'p'	"	"	"	"	"	"
'q'	119°	37'	10"	"	"	"
'r'	185°	52'	10"	"	"	"
's'	119°	37'	10"	"	"	"

Notes

It is intended to dedicate the roads 66 ft wide and all splayed corners, to the public for road purposes.

It is intended to dedicate the strips of land 94 feet wide and 0a.3r. 17¾ p. and 3a. 3r 6½ p. in area, to the public for road purposes.

It is intended to create an easement in lot 14 in favour of the Council

Alterations & additions made by me 3/10/58

P.J. Robinson

The Common Seal of the Council of the Municipality of Liverpool was hereunto affixed on the Eighth day of October, 1958, pursuant to a Resolution of Council passed on the Seventh day of October, 1958

Mayor

Town Clerk

1958/66

Subscribed, certified & declared before me at Auburn this 6th day of January, 1958.

L.V.B. Paque J.P.

Justice of the Peace

I, Paul Joseph Robinson of K.J. Morrow, 22 Cooper St, Strathfield a surveyor registered under the Surveyors Act, 1929-1946, hereby certify that the survey represented in this plan is accurate and has been made by me in accordance with the Survey Practice Regulations 1933 and was completed on 13th December, 1957 and I hereby solemnly and sincerely declare that permanent marks have been placed as shown in the plan and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.

P.J. Robinson D.P. 29317 (E)

Surveyor registered under the Surveyors Act, 1929-1946

Datum Line of Azimuth "X-Y"

DEPOSITED PLAN No. 29317 (E)

on the 23rd day of December 1958
as regards land under R.P. Act

Registrar General

Scale: 300 ft to an inch

No.	Chord	Arc	Radius
1	280° 37' 10" 137' 5½"	137' 7½"	830' 0"
2	147° 30' 20" 362' 3½"	397' 2"	270' 0"
3	52° 30' 50" 367' 3¼"	403' 11"	"
4	277° 04' 40" 21' 10½"	21' 10½"	367' 0"
5	290° 27' 10" 148' 5"	149' 5½"	"
6	329° 32' 10" 290' 1"	301' 5½"	315' 0"
7	13° 17' 10" 178' 3½"	180' 8¾"	317' 0"
8	62° 44' 40" 291' 9¾"	308' 8¾"	267' 0"
9	290° ~~01'~~ 07' 10" 55' 7¾"	55' 8½"	336' 0"
10	311° 55' 20" 197' 0½"	200' 0"	"
11	346° 02' 30" "	"	"
12	6° 21' 40" 38' 6½"	38' 7½"	"
13	206° 42' 30" 197' 0½"	200' 0"	"
14	240° 47' 10" "	"	"
15	266° 36' 40" 102' 2¾"	102' 8"	"
16	288° 44' 40" 200' 7"	202' 5"	433' 0"
17	329° 32' 10" 350' 10½"	364' 7½"	381' 0"
18	13° 17' 10" 215' 5"	218' 3¼"	383' 0"
19	45° 32' 30" 182' 8¼"	185' 0½"	333' 0"
20	78° 39' 50" 197' 0"	200' 0"	"

Permanent Marks

Mark	Bearing			Distance	Type
'a'	97°	44'	20"	1' 6"	Concrete Block
'b'	"	"	"	"	"
'c'	185°	52'	10"	"	"
'd'	195°	22'	10"	"	"
'e'	279°	39'	10"	"	"
'f'	195°	22'	10"	"	"
'g'	279°	39'	10"	"	"
'h'	"	"	"	"	"
'j'	5°	22'	10"	"	"
'k'	279°	39'	10"	"	"
'l'	5°	22'	10"	"	"
'm'	32°	07'	10"	"	"
'n'	"	"	"	"	"
'o'	86°	57'	10"	"	"
'p'	"	"	"	"	"
'q'	119°	37'	10"	"	"
'r'	185°	52'	10"	"	"
's'	119°	37'	10"	"	"

Notes

It is intended to dedicate the roads 66 ft wide and all splayed corners, to the public for road purposes.

It is intended to dedicate the strips of land 9½ feet wide and 0a.3r.17¾p. and 3a.3r.6½p. in area, to the public for road purposes.

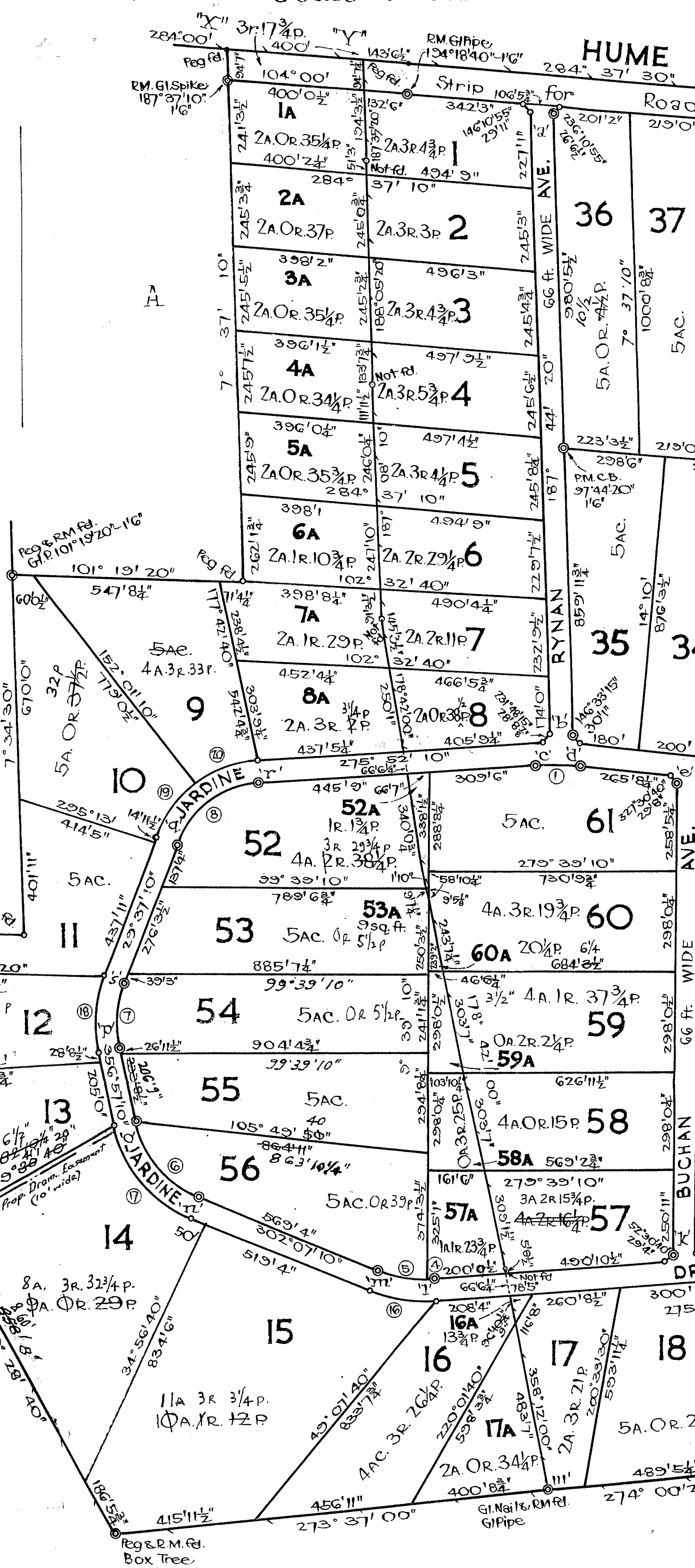
It is intended to create an easement in lot 14 in favour of the Council

Alterations & additions made by me 3/12/58
PJ Robinson

The Common Seal of the Council of the Municipality of Liverpool was hereunto affixed on the Eighth day of October, 1958, pursuant to a Resolution of Council passed on the Seventh day of October, 1958

Mayor

Town Clerk



1958/66

Subscribed, certified & declared

Scale: 300 ft to an inch

DP 29317 (E)

22nd December 58.

HUME HIGHWAY 12'-42'-12'

Strip for Road Widening 94 ft. wide, 3a. 3r. 6½p.

RYNAN AVE. 66 ft. WIDE

BUCHAN AVE. 66 ft. WIDE

DRIVE

DRIVE

5 Ac. each

I, Paul Joseph Robinson of K.J. Morrow, 22 Cooper St, Strathfield a surveyor registered under the Surveyors Act, 1929-1946, hereby certify that the survey represented in this plan is accurate and has been made by me in accordance with the Survey Practice Regulations 1933 and was completed on 13th. December, 1957 and I hereby solemnly and sincerely declare that permanent marks have been placed as shown in the plan and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.

Subscribed, certified & declared before me at Auburn this 6th day of January, 1958.

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 29317

FEET	INCHES	METRES
1	-	0.305
1	0 1/2	0.318
1	6	0.457
1	6 1/4	0.464
1	10	0.559
2	-	0.610
2	6	0.762
3	2	0.965
3	3 5/8	1.006
5	2 5/8	1.591
5	8 1/2	1.740
5	9 1/2	1.765
9	5 1/8	2.873
9	7 1/4	2.927
10	-	3.048
12	-	3.658
12	2 3/4	3.727
14	11 1/2	4.559
16	1 1/4	4.909
18	-	5.486
20	-	6.096
21	10 1/2	6.668
22	5	6.833
23	1 1/4	7.042
26	6 1/2	8.090
26	10	8.179
26	11 1/2	8.217
27	2 1/2	8.293
28	8 1/2	8.750
28	8 7/8	8.760
29	4	8.941
29	6	8.992
29	8	9.042
29	11	9.119
30	1	9.169
30	4 1/2	9.258
31	5 1/2	9.589
36	5 1/2	11.113
38	6 1/2	11.748
38	7 1/2	11.773
39	3	11.963
39	5	12.014
39	10 5/8	12.157
42	-	12.802
46	3 1/2	14.110
49	9 3/8	15.173
50	-	15.240
51	3	15.621
55	7 3/4	16.961
55	8 1/2	16.980
58	10 1/4	17.939
60	0 1/2	18.301
66	-	20.117
66	6 1/4	20.276
66	7	20.295
71	4 1/4	21.749
78	5	23.901
79	4	24.181
81	3	24.765
90	1	27.457
91	1 1/4	27.769
91	2 1/2	27.800
91	3 1/2	27.826
94	-	28.651
94	4	28.753
94	7	28.829
94	7 1/4	28.835
96	9	29.489
97	4	29.667
102	2 3/4	31.159
102	6	31.242
102	8	31.293
103	10 1/4	31.655
106	5 3/4	32.455
111	-	33.833
111	11 1/2	34.125
115	-	35.052

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 29317 CONTINUED

FEET	INCHES	METRES
116	8	35.560
119	2	36.322
121	3 1/4	36.963
130	-	39.624
132	6	40.386
133	7 3/4	40.735
137	4	41.859
137	5 1/2	41.897
137	7 1/2	41.948
143	6 1/2	43.752
144	3 1/2	43.980
145	3 1/2	44.285
147	9	45.034
148	5	45.237
149	5 1/2	45.555
161	6	49.225
164	0 3/4	50.006
171	9 1/4	52.356
173	7	52.908
174	-	53.035
178	3 1/2	54.343
179	-	54.559
180	-	54.864
180	8 3/4	55.086
182	8 1/4	55.683
185	0 1/2	56.401
186	5 3/4	56.839
187	6 1/2	57.163
190	3 1/8	57.991
190	3 1/2	58.001
194	3 1/2	59.220
197	-	60.046
197	0 1/2	60.058
197	10	60.300
200	-	60.960
200	0 1/2	60.973
200	7	61.138
201	2	61.316
202	5	61.697
205	-	62.484
206	9	63.017
208	4	63.500
214	8 3/4	65.449
215	5	65.659
218	3 1/4	66.529
219	-	66.751
223	3 1/2	68.059
227	1	69.215
229	7 1/2	69.990
232	9 1/2	70.955
236	1 1/2	71.971
238	4 1/2	72.657
239	2	72.898
241	1 3/4	73.501
241	3 1/2	73.546
241	11 3/4	73.755
243	0 1/4	74.073
243	7 1/4	74.251
245	0 3/4	74.695
245	2 3/4	74.746
245	3	74.752
245	3 3/4	74.771
245	4 3/4	74.797
245	5 1/2	74.816
245	6 1/2	74.841
245	7 1/2	74.867
245	8 1/4	74.886
245	9	74.905
246	0 1/4	74.987
247	10	75.540
250	-	76.200
250	1	76.225
250	3 1/2	76.289
250	11	76.479
258	5 1/4	78.772
260	8 1/2	79.464
262	1 3/4	79.902

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 29317 CONTINUED

FEET	INCHES	METRES
262	11	80.137
265	8 1/4	80.982
267	-	81.382
268	-	81.686
270	-	82.296
271	5 1/2	82.741
275	10 1/2	84.087
276	3 1/2	84.214
278	10	84.988
280	-	85.344
287	3 1/4	87.560
288	8 1/4	87.992
290	1	88.417
291	1 1/4	88.729
291	9 3/4	88.944
291	10 1/8	88.954
292	8 3/4	89.224
292	9 1/4	89.237
294	6 1/2	89.776
294	8 1/4	89.821
295	-	89.916
296	4 3/4	90.341
298	0 1/4	90.837
298	0 1/2	90.843
298	6	90.983
300	-	91.440
301	5 1/2	91.885
303	7	92.532
303	9 1/4	92.589
308	8 3/4	94.101
309	1 1/2	94.221
309	6	94.336
312	5 3/4	95.244
315	-	96.012
317	-	96.622
325	1	99.085
333	-	101.498
336	-	102.413
338	1 1/2	103.061
339	6	103.480
340	0 3/4	103.651
342	3	104.318
350	10 1/2	106.947
362	3 1/2	110.427
364	7 1/2	111.138
367	-	111.862
367	3 1/4	111.944
374	3 1/2	114.084
381	-	116.129
383	-	116.738
389	2	118.618
396	0 1/4	120.707
396	1 1/2	120.739
397	2	121.056
398	1	121.336
398	2	121.361
398	8 1/4	121.520
400	-	121.920
400	0 1/2	121.933
400	2 1/4	121.977
400	8 3/4	122.142
401	11	122.504
403	11	123.114
405	9 1/4	123.679
414	5	126.314
415	11 1/2	126.784
418	8 1/2	127.622
433	-	131.978
437	5 1/4	133.331
437	11	133.477
440	1	134.137
445	9	135.865
446	5	136.068
450	-	137.160
451	3	137.541
452	3 1/2	137.859
452	4 1/4	137.878

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 29317 CONTINUED

FEET	INCHES	METRES
456	11	139.268
461	6 1/2	140.678
463	1	141.148
463	6	141.275
466	5 3/4	142.183
467	-	142.342
468	2 1/2	142.710
469	11 1/4	143.237
483	7	147.396
489	5 1/4	149.181
490	4 1/4	149.460
490	10 1/2	149.619
494	9	150.800
496	3	151.257
497	4 1/2	151.600
497	9 1/2	151.727
502	2 1/2	153.073
504	8 3/4	153.841
519	4	158.293
520	6 1/2	158.661
542	4 3/4	165.322
547	8 1/4	166.935
562	6 1/2	171.463
569	2 3/4	173.501
569	4	173.533
581	6 1/2	177.254
581	7 3/4	177.286
591	3 1/2	180.226
593	11 1/4	181.032
598	3 3/4	182.366
626	11 1/2	191.097
670	-	204.216
684	6 1/4	208.642
694	1 1/2	211.569
696	2 3/4	212.211
705	3 1/2	214.973
710	9 3/4	216.656
730	9 3/4	222.752
764	4 1/4	232.975
779	0 1/2	237.452
783	7	238.836
789	6 3/4	240.659
806	3 1/4	245.751
830	-	252.984
833	7 3/4	254.095
834	6	254.356
836	7 1/2	255.003
859	11 3/4	262.122
860	-	262.128
860	8	262.331
863	10 1/4	263.303
876	3 1/2	267.094
883	5	269.265
885	7 1/4	269.932
898	2 3/4	273.780
900	6	274.472
904	4 3/4	275.660
926	5 1/2	282.385
935	4 1/2	285.102
960	0 3/4	292.627
980	5 1/2	298.844
1000	8 3/4	305.022
1003	2 1/4	305.772
1035	-	315.468
1055	-	321.564
1073	6 1/2	327.216
1078	6	328.727
1081	11 3/4	329.787
2589	7 3/4	789.324

AC	RD	P	SQ M
-	-	13 3/4	347.8
-	-	20 1/4	512.2
-	1	1 3/4	1056
-	2	2 1/4	2080
-	3	17 3/4	3484

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 29317 CONTINUED

AC	RD	P	SQ M
-	3	25	3667
1	1	23 3/4	5659
2	-	34 1/4	8960
2	-	35 1/4	8985
2	-	35 3/4	8998
2	-	37	9030
2	-	38 1/2	9067
2	1	10 3/4	9377
2	1	29	9839

AC	RD	P	HA
2	2	11	1.04
2	2	29 1/4	1.086
2	3	3	1.12
2	3	3 1/4	1.121
2	3	4 1/4	1.124
2	3	4 3/4	1.125
2	3	5 3/4	1.127
2	3	21	1.166
3	2	15 3/4	1.456
3	3	6 1/2	1.534
4	-	15	1.657
4	1	37 3/4	1.815
4	2	10 1/2	1.848
4	3	19 3/4	1.972
4	3	23	1.98
4	3	26 1/4	1.989
4	3	29 3/4	1.998
4	3	32	2.0
4	3	33	2.0
4	3	37	2.016
4	3	37 3/4	2.018
5	-	-	2.023
5	-	3.9	2.033
5	-	5 1/2	2.037
5	-	9	2.046
5	-	10 1/2	2.05
5	-	10 3/4	2.051
5	-	12 1/4	2.054
5	-	15 1/2	2.063
5	-	21	2.076
5	-	32	2.1
5	-	36 3/4	2.116
5	-	39	2.122
5	3	11	2.355
8	3	32 3/4	3.624
11	3	3 1/4	4.763

SQ FT	SQ M
9	0.8

Healthy Environment, Healthy Community, Healthy Business

Search results

Your search for:LGA: Liverpool City Council

Matched 12 notices relating to 2 sites.

Search Again

Refine Search

Suburb	Address	Site Name	Notices related to this site
Chipping Norton	85-107 Alfred Road	Australian Chemical Refiners	3 current
Moorebank	Bapaume Road	ABB Australia	1 current and 8 former

Page 1 of 1

22 August 2014

Healthy Environment, Healthy Community, Healthy Business

Search results

Your search for: **General Search** with the following criteria

Suburb - EDMONDSON PARK

returned 0 result

Search Again

TEST PIT LOG SHEET

Client: Catholic Education Office, Diocese of Wollongong

Project: Edmondson Park Environmental Investigation

Location: Jardine Drive, Edmondson Park, NSW

HOLE No. BH109

SHEET 1 **OF** 1

Position: Refer to test location plan	**Surface RL:**		**Processed:** RCP
Method of Exploration: Hand auger	**Hole Size:** L: 75mm x W: 75mm		**Checked:** VW
Date: 01/09/14	**Logged by:** TN		**Date:** 18/09/14

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description (SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength)	Moisture Condition	Consistency / Density Index	Comments Observations
	GNO				CL	CLAY, brown, low plasticity (natural).	SM		PID 0.6 ppm
						From 0.2m, becoming red-brown, low to medium plasticity.			PID 0.4 ppm
			0.30		CL-CI	Sandy CLAY, orange-grey, low to medium plasticity fine grained sand, trace weathered shale fragments (natural).	SM		PID 0.3 ppm
			0.50			Hand auger terminated at 0.5m.			
1									

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
57 Herbert Street, Artarmon NSW 2064 Australia
T: 61 2 9462 4700 F: 61 2 9462 4710 E: atnmail@ghd.com
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 2123862

TEST PIT LOG SHEET

Client: Catholic Education Office, Diocese of Wollongong

Project: Edmondson Park Environmental Investigation

Location: Jardine Drive, Edmondson Park, NSW

HOLE No. BH110

SHEET 1 **OF** 1

Position: Refer to test location plan	**Surface RL:**		**Processed:** RCP
Method of Exploration: Hand auger	**Hole Size:** L: 75mm x W: 75mm		**Checked:** VW
Date: 01/09/14	**Logged by:** TN		**Date:** 18/09/14

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments Observations
	GNO		0.10		CL	Sandy CLAY, low plasticity (natural).	D-SM		PID 0.8 ppm
						Hand auger terminated at 0.1m.			
1									

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
57 Herbert Street, Artarmon NSW 2064 Australia
T: 61 2 9462 4700 F: 61 2 9462 4710 E: atnmail@ghd.com
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 2123862

TEST PIT LOG SHEET

Client: Catholic Education Office, Diocese of Wollongong

Project: Edmondson Park Environmental Investigation

Location: Jardine Drive, Edmondson Park, NSW

HOLE No. BH115

SHEET 1 **OF** 1

Position: Refer to test location plan	**Surface RL:**		**Processed:** RCP
Method of Exploration: Hand auger	**Hole Size:** L: 75mm x W: 75mm		**Checked:** VW
Date: 01/09/14	**Logged by:** TN		**Date:** 18/09/14

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments Observations
	GNO		0.10			CLAY, red-brown, medium plasticity (fill).	SM		Located at drainage of old cultivation row. Grass at surface. PID 0.1 ppm
						Hand auger terminated at 0.1m.			
1									

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
57 Herbert Street, Artarmon NSW 2064 Australia
T: 61 2 9462 4700 F: 61 2 9462 4710 E: atnmail@ghd.com
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 2123862

TEST PIT LOG SHEET

Client: Catholic Education Office, Diocese of Wollongong

Project: Edmondson Park Environmental Investigation

Location: Jardine Drive, Edmondson Park, NSW

HOLE No. BH120

SHEET 1 **OF** 1

Position: Refer to test location plan	**Surface RL:**		**Processed:** RCP
Method of Exploration: Hand auger	**Hole Size:** L: 75mm x W: 75mm		**Checked:** VW
Date: 01/09/14	**Logged by:** TN		**Date:** 18/09/14

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments Observations
	GNO					CLAY, brown, low plasticity (fill).	SM		PID 0.2 ppm
			0.20		CL	CLAY, red-orange, low to medium plasticity (natural).	SM		PID 0.3 ppm
						From 0.4m, becoming orange, medium plasticity.			PID 0.4 ppm
			0.50			Hand auger terminated at 0.5m.			
1									

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
57 Herbert Street, Artarmon NSW 2064 Australia
T: 61 2 9462 4700 F: 61 2 9462 4710 E: atnmail@ghd.com
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 2123862

GEO_TEST PIT_EDMONSON PK LOGS.GPJ GHD_GEO_TEMPLATE.GDT 18/9/14

TEST PIT LOG SHEET

Client: Catholic Education Office, Diocese of Wollongong

Project: Edmondson Park Environmental Investigation

Location: Jardine Drive, Edmondson Park, NSW

HOLE No. BH206

SHEET 1 **OF** 1

Position: Refer to test location plan	**Surface RL:**		**Processed:** RCP
Method of Exploration: Hand auger	**Hole Size:** L: 75mm x W: 75mm		**Checked:** VW
Date: 02/09/14	**Logged by:** TN		**Date:** 18/09/14

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments Observations
	GNO		0.10			CLAY, brown, medium plasticity (fill).	SM		Located on ag plot drainage line. PID < 0.1 ppm
						Hand auger terminated at 0.1m.			
1									

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
57 Herbert Street, Artarmon NSW 2064 Australia
T: 61 2 9462 4700 F: 61 2 9462 4710 E: atnmail@ghd.com
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 2123862

TEST PIT LOG SHEET

Client: Catholic Education Office, Diocese of Wollongong

Project: Edmondson Park Environmental Investigation

Location: Jardine Drive, Edmondson Park, NSW

HOLE No. BH209

SHEET 1 **OF** 1

Position: Refer to test location plan	**Surface RL:**		**Processed:** RCP
Method of Exploration: Hand auger	**Hole Size:** L: 75mm x W: 75mm		**Checked:** VW
Date: 02/09/14	**Logged by:** TN		**Date:** 18/09/14

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments Observations
	GNO		0.10			CLAY, brown, medium plasticity (fill).	SM		PID 0.1 ppm
						Hand auger terminated at 0.1m.			
1									

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
57 Herbert Street, Artarmon NSW 2064 Australia
T: 61 2 9462 4700 F: 61 2 9462 4710 E: atnmail@ghd.com
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 2123862

TEST PIT LOG SHEET

Client: Catholic Education Office, Diocese of Wollongong

Project: Edmondson Park Environmental Investigation

Location: Jardine Drive, Edmondson Park, NSW

HOLE No. BH210

SHEET 1 **OF** 1

Position: Refer to test location plan	**Surface RL:**		**Processed:** RCP
Method of Exploration: Hand auger	**Hole Size:** L: 75mm x W: 75mm		**Checked:** VW
Date: 02/09/14	**Logged by:** TN		**Date:** 18/09/14

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments Observations
	GNO					CLAY, brown, low plasticity (fill).	SM		PID 0.1 ppm
			0.20		CL	CLAY, red-orange, low plasticity (natural).	SM		PID 0.2 ppm
						From 0.4m, becoming orange and grey, medium plasticity.			
			0.50			Hand auger terminated at 0.5m.			PID 0.2 ppm
1									

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
57 Herbert Street, Artarmon NSW 2064 Australia
T: 61 2 9462 4700 F: 61 2 9462 4710 E: atnmail@ghd.com
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 2123862

GEO_TEST PIT_EDMONSON PK LOGS.GPJ GHD_GEO_TEMPLATE.GDT 18/9/14

Appendix F
Table F1
Health Environmental Risk Screening - Soil

Catholic Diocese of Wollongong
Jardine Drive
Phase 1 and Limited Phase 2

				Metals							TRH - NEPM 2013						TPH - NEPM 1999					BTEX & MAH						PAH								
				Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	TRH F1 (TRH C6-C10 minus BTEX)	TRH C6 - C10 Fraction	TRH F2 (TRH C10-C16 minus Naphthalene)	TRH >C10 - C16 Fraction	TRH >C16 - C34 Fraction (F3)	TRH >C34 - C40 Fraction (F4)	C6 - C 9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (Sum of Total) - Lab calc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Benzo(a)pyrene TEQ (half LOR) - Lab Calc	Benzo(a)pyrene TEQ (LOR) - Lab Calc	Benzo(a)pyrene TEQ (zero) - Lab Calc	Benzo[b+j]fluoranthene	PAHs (Sum of total) - Lab calc	Pyrene	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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				2	0.4	5	5	5	0.05	5	5	20	20	50	50	100	100	20	20	50	50	50	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Site Specific EIL-Urban Residential- Public Open Space				107		414	220	1117		277	733																										
NEPM 2013 ESL Urban residential and public open space, Coarse Soil												180			120	300	2800						50	85	70			105									0.7
NEPM 2013 HIL Residential A Soil				100	20		6000	300	40	400	7400																						300				
Field_ID	**LocCode**	**Sample_Depth_Range**	**Sampled_Date-Time**																																		
BH101_0-0.1	BH101	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102_0-0.1	BH102	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103_0-0.1	BH103	0-0.1	1/09/2014	2.7	<0.4	11	9.8	20	<0.05	7.1	29	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH104_0-0.1	BH104	0-0.1	1/09/2014	4	<0.4	11	12	22	<0.05	7.1	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH105_0-0.1	BH105	0-0.1	1/09/2014	4.7	<0.4	12	14	17	<0.05	6.9	36	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH106_0-0.1	BH106	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107_0-0.1	BH107	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108_0.4-0.5	BH108	0.4-0.5	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108_0-0.1	BH108	0-0.1	1/09/2014	6.6	<0.4	14	15	17	<0.05	7.7	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109_0.2-0.3	BH109	0.2-0.3	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110_0-0.1	BH110	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111_0.2-0.3	BH111	0.2-0.3	1/09/2014	4.8	<0.4	16	20	18	<0.05	8.9	36	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH112 Fragement	BH112	Surface	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112_0-0.1	BH112	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH113_0-0.1	BH113	0-0.1	1/09/2014	3.5	<0.4	12	12	14	<0.05	6.3	24	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH114_0.4-0.5	BH114	0.4-0.5	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH115_0-0.1	BH115	0-0.1	1/09/2014	6.5	<0.4	13	21	15	<0.05	5.5	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116_0.1-0.2	BH116	0.1-0.2	1/09/2014	6.9	<0.4	17	31	25	<0.05	17	72	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH117_0.2-0.3	BH117	0.2-0.3	1/09/2014	9.7	<0.4	14	19	110	<0.05	12	58	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH118_0.2-0.3	BH118	0.2-0.3	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH119_0.2-0.3	BH119	0.2-0.3	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH119_0-0.1	BH119	0-0.1	1/09/2014	10	<0.4	15	24	20	<0.05	8.5	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH201_0-0.1	BH201	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH202 Fragement	BH202	Surface	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH202_0-0.1	BH202	0-0.1	1/09/2014	5	<0.4	11	9.9	11	<0.05	<5	19	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH203_0.4-0.5	BH203	0.4-0.5	1/09/2014	14	<0.4	23	21	15	<0.05	5.9	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH204_0-0.1	BH204	0-0.1	1/09/2014	7.2	<0.4	16	9.5	21	<0.05	5	75	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH205_0-0.1	BH205	0-0.1	2/09/2014	6.9	<0.4	12	15	21	<0.05	7.9	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH206_0-0.1	BH206	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH207_0.2-0.3	BH207	0.2-0.3	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH208 Fragement	BH208	Surface	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH208_0-0.1	BH208	0-0.1	2/09/2014	7	<0.4	14	25	48	<0.05	10	280	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH209_0-0.1	BH209	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH210_0.4-0.5	BH210	0.4-0.5	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH211_0-0.1	BH211	0-0.1	2/09/2014	7.7	<0.4	18	76	38	<0.05	8.8	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH212_0-0.1	BH212	0-0.1	2/09/2014	6.9	<0.4	14	29	20	<0.05	8.3	64	<20	<20	<50	<50	<100	<100	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH213_0-0.1	BH213	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH214_0-0.1	BH214	0-0.1	2/09/2014	9.2	<0.4	19	36	23	<0.05	8.9	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH215_0-0.1	BH215	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH216_0-0.1	BH216	0-0.1	2/09/2014	5.5	<0.4	13	23	23	<0.05	7.4	110	<20	<20	<50	<50	<100	<100	<20	<20	<50	63	63	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH217_0.2-0.3	BH217	0.2-0.3	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH218_0-0.1	BH218	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH219_0.4-0.5	BH219	0.4-0.5	2/09/2014	9.1	<0.4	6.7	12	8.5	<0.05	<5	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix F
Table F1
Health Environmental Risk Screening - Soil

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Parameters/Inorganics: Cation Exchange Capacity	pH	Moisture	Asbestos
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	cmolc/kg		%	
LOR				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.05		0.1	
NEPM 2013 Site Specific EIL-Urban Residential- Public Open Space											170					
NEPM 2013 ESL Urban residential and public open space, Coarse Soil																
NEPM 2013 HIL Residential A Soil																
BH101_0-0.1	BH101	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	19	
BH102_0-0.1	BH102	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	23	
BH103_0-0.1	BH103	0-0.1	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	24	
BH104_0-0.1	BH104	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	31	None
BH105_0-0.1	BH105	0-0.1	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	21	None
BH106_0-0.1	BH106	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	22	
BH107_0-0.1	BH107	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	
BH108_0.4-0.5	BH108	0.4-0.5	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	19	
BH108_0-0.1	BH108	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	20	
BH109_0.2-0.3	BH109	0.2-0.3	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	22	
BH110_0-0.1	BH110	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	13	
BH111_0.2-0.3	BH111	0.2-0.3	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	20	
BH112 Fragement	BH112	Surface	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	Detected
BH112_0-0.1	BH112	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	None
BH113_0-0.1	BH113	0-0.1	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	13	None
BH114_0.4-0.5	BH114	0.4-0.5	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	18	
BH115_0-0.1	BH115	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	18	
BH116_0.1-0.2	BH116	0.1-0.2	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	18	7.6	13	
BH117_0.2-0.3	BH117	0.2-0.3	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	20	
BH118_0.2-0.3	BH118	0.2-0.3	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	19	None
BH119_0.2-0.3	BH119	0.2-0.3	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	21	
BH119_0-0.1	BH119	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	18	
BH201_0-0.1	BH201	0-0.1	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	15	
BH202 Fragement	BH202	Surface	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	Detected
BH202_0-0.1	BH202	0-0.1	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	11	None
BH203_0.4-0.5	BH203	0.4-0.5	1/09/2014	-	-	-	-	-	-	-	-	-	-	-	24	
BH204_0-0.1	BH204	0-0.1	1/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	13	None
BH205_0-0.1	BH205	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	16	
BH206_0-0.1	BH206	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	23	
BH207_0.2-0.3	BH207	0.2-0.3	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	19	
BH208 Fragement	BH208	Surface	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	Detected
BH208_0-0.1	BH208	0-0.1	2/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	24	6	21	None
BH209_0-0.1	BH209	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	19	
BH210_0.4-0.5	BH210	0.4-0.5	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	
BH211_0-0.1	BH211	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	21	
BH212_0-0.1	BH212	0-0.1	2/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	20	None
BH213_0-0.1	BH213	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	19	
BH214_0-0.1	BH214	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	
BH215_0-0.1	BH215	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	18	
BH216_0-0.1	BH216	0-0.1	2/09/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	22	None
BH217_0.2-0.3	BH217	0.2-0.3	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	20	
BH218_0-0.1	BH218	0-0.1	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	17	
BH219_0.4-0.5	BH219	0.4-0.5	2/09/2014	-	-	-	-	-	-	-	-	-	-	-	18	

Field_ID	OC Pesticides: 4,4 DDD	4,4 DDE	4,4 DDT	a-BHC	Aldrin	b-BHC	chlordane	d-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.05	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	0.05	0.05	0.05	0.05	0.2	1
NEPM 2013 Site Specific EIL-Urban Residential- Public Open Space			180																		
NEPM 2013 ESL Urban residential and public open space, Coarse Soil																					
NEPM 2013 HIL Residential A Soil							50						10				6		10	300	20
BH101_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH102_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH103_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH104_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH105_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH106_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH107_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH108_0.4-0.5	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH108_0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109_0.2-0.3	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH110_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH111_0.2-0.3	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH112 Fragement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH113_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH114_0.4-0.5	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH115_0-0.1	<0.05	0.08	<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	<0.05	<0.05	<0.2	<1
BH116_0.1-0.2	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH117_0.2-0.3	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH118_0.2-0.3	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH119_0.2-0.3	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH119_0-0.1	<0.05	0.08	<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	<0.05	<0.05	<0.2	<1
BH201_0-0.1	<0.05	0.06	<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	<0.05	<0.05	<0.2	<1
BH202 Fragement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH202_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH203_0.4-0.5	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH204_0-0.1	<0.05	0.08	0.16	<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	<0.05	<0.05	<0.2	<1
BH205_0-0.1	<0.05	0.31	<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	<0.05	<0.05	<0.2	<1
BH206_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH207_0.2-0.3	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH208 Fragement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH208_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH209_0-0.1	<0.05	0.13	<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	<0.05	<0.05	<0.2	<1
BH210_0.4-0.5	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH211_0-0.1	<0.05	0.06	<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	<0.05	<0.05	<0.2	<1
BH212_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH213_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH214_0-0.1	<0.05	0.07	<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	<0.05	<0.05	<0.2	<1
BH215_0-0.1	<0.05	0.08	<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	<0.05	<0.05	<0.2	<1
BH216_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH217_0.2-0.3	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH218_0-0.1	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1
BH219_0.4-0.5	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.2	<1

Field Duplicates (SOIL)
Filter: [Sampled_Date-Time] <= #12 Sep 2014#

SDG	9/02/2014	9/02/2014		9/02/2014	9/02/2014	
Field_ID	BH102_0-0.1	QA01	RPD	BH206_0-0.1	QA02	RPD
Sampled_Date-Time	1/09/2014	1/09/2014		2/09/2014	2/09/2014	
Chem_Group	ChemName	Units	LOR						
BTEX	Benzene	mg/kg	0.1						
	Toluene	mg/kg	0.1						
	Ethylbenzene	mg/kg	0.1						
	Xylene (o)	mg/kg	0.1						
	Xylene (m & p)	mg/kg	0.2						
	Xylene Total	mg/kg	0.3						
Inorganics	Moisture	%	0.1	23.0	22.0	4	23.0	19.0	19
Metals	Arsenic	mg/kg	2						
	Cadmium	mg/kg	0.4						
	Chromium (III+VI)	mg/kg	5						
	Copper	mg/kg	5						
	Lead	mg/kg	5						
	Mercury	mg/kg	0.05						
	Nickel	mg/kg	5						
	Zinc	mg/kg	5						
OC Pesticides	4,4 DDD	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	4,4 DDE	mg/kg	0.05	<0.05	<0.05	0	<0.05	0.05	0
	4,4 DDT	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	a-BHC	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Aldrin	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	b-BHC	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	chlordane	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	d-BHC	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Dieldrin	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Endosulfan I	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Endosulfan II	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Endosulfan sulphate	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Endrin	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	g-BHC (Lindane)	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Heptachlor	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Hexachlorobenzene	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Methoxychlor	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
	Toxaphene	mg/kg	1	<1.0	<1.0	0	<1.0	<1.0	0
PAH	Benzo(a)pyrene TEQ (half LOR) - Lab Calc	mg/kg	0.5						
	Benzo(a)pyrene TEQ (LOR) - Lab Calc	mg/kg	0.5						
	Benzo(a)pyrene TEQ (zero) - Lab Calc	mg/kg	0.5						
	Benzo[b+j]fluoranthene	mg/kg	0.5						
	PAHs (Sum of total) - Lab calc	mg/kg	0.5						
	Pyrene	mg/kg	0.5						
	Acenaphthene	mg/kg	0.5						
	Acenaphthylene	mg/kg	0.5						
	Anthracene	mg/kg	0.5						
	Benz(a)anthracene	mg/kg	0.5						
	Benzo(a) pyrene	mg/kg	0.5						
	Benzo(k)fluoranthene	mg/kg	0.5						
	Benzo(g,h,i)perylene	mg/kg	0.5						
	Chrysene	mg/kg	0.5						
	Dibenz(a,h)anthracene	mg/kg	0.5						
	Fluoranthene	mg/kg	0.5						
	Fluorene	mg/kg	0.5						
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5						
	Naphthalene	mg/kg	0.5						
	Naphthalene	mg/kg	0.5						
	Phenanthrene	mg/kg	0.5						
TPH - NEPM 1999	C6 - C 9 Fraction	mg/kg	20						
	C10 - C14 Fraction	mg/kg	20						
	C15 - C28 Fraction	mg/kg	50						
	C29 - C36 Fraction	mg/kg	50						
	C10 - C36 (Sum of Total) - Lab calc	mg/kg	50						
TRH - NEPM 2013	TRH F1 (TRH C6-C10 minus BTEX)	mg/kg	20						
	TRH C6 - C10 Fraction	mg/kg	20						
	TRH F2 (TRH C10-C16 minus Naphthalene)	mg/kg	50						
	TRH >C10 - C16 Fraction	mg/kg	50						
	TRH >C16 - C34 Fraction (F3)	mg/kg	100						
	TRH >C34 - C40 Fraction (F4)	mg/kg	100						

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 50 (1-5 x LOR); 50 (5-30 x LOR); 50 (> 30 x LOR))
***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 prim

Field Duplicates (SOIL)
Filter: [Sampled_Date-Time] <= #12 Sep 2014#

SDG	9/02/2014	9/02/2014	
Field_ID	BH208_0-0.1	QA03	**RPD**
Sampled_Date-Time	2/09/2014	2/09/2014	

Chem_Group	ChemName	Units	LOR			
BTEX	Benzene	mg/kg	0.1	<0.1	<0.1	0
	Toluene	mg/kg	0.1	<0.1	<0.1	0
	Ethylbenzene	mg/kg	0.1	<0.1	<0.1	0
	Xylene (o)	mg/kg	0.1	<0.1	<0.1	0
	Xylene (m & p)	mg/kg	0.2	<0.2	<0.2	0
	Xylene Total	mg/kg	0.3	<0.3	<0.3	0
Inorganics	Moisture	%	0.1	17.0	17.0	0
Metals	Arsenic	mg/kg	2	7.0	5.3	28
	Cadmium	mg/kg	0.4	<0.4	<0.4	0
	Chromium (III+VI)	mg/kg	5	14.0	12.0	15
	Copper	mg/kg	5	25.0	19.0	27
	Lead	mg/kg	5	48.0	32.0	40
	Mercury	mg/kg	0.05	<0.05	<0.05	0
	Nickel	mg/kg	5	10.0	9.4	6
	Zinc	mg/kg	5	**280.0**	**160.0**	**55**
OC Pesticides	4,4 DDD	mg/kg	0.05	<0.05	<0.05	0
	4,4 DDE	mg/kg	0.05	<0.05	<0.05	0
	4,4 DDT	mg/kg	0.05	<0.05	<0.05	0
	a-BHC	mg/kg	0.05	<0.05	<0.05	0
	Aldrin	mg/kg	0.05	<0.05	<0.05	0
	b-BHC	mg/kg	0.05	<0.05	<0.05	0
	chlordane	mg/kg	0.1	<0.1	<0.1	0
	d-BHC	mg/kg	0.05	<0.05	<0.05	0
	Dieldrin	mg/kg	0.05	<0.05	<0.05	0
	Endosulfan I	mg/kg	0.05	<0.05	<0.05	0
	Endosulfan II	mg/kg	0.05	<0.05	<0.05	0
	Endosulfan sulphate	mg/kg	0.05	<0.05	<0.05	0
	Endrin	mg/kg	0.05	<0.05	<0.05	0
	Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	0
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0
	g-BHC (Lindane)	mg/kg	0.05	<0.05	<0.05	0
	Heptachlor	mg/kg	0.05	<0.05	<0.05	0
	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	0
	Hexachlorobenzene	mg/kg	0.05	<0.05	<0.05	0
	Methoxychlor	mg/kg	0.2	<0.2	<0.2	0
	Toxaphene	mg/kg	1	<1.0	<1.0	0
PAH	Benzo(a)pyrene TEQ (half LOR) - Lab Calc	mg/kg	0.5	0.6	0.6	0
	Benzo(a)pyrene TEQ (LOR) - Lab Calc	mg/kg	0.5	1.2	1.2	0
	Benzo(a)pyrene TEQ (zero) - Lab Calc	mg/kg	0.5	<0.5	<0.5	0
	Benzo[b+j]fluoranthene	mg/kg	0.5	<0.5	<0.5	0
	PAHs (Sum of total) - Lab calc	mg/kg	0.5	<0.5	<0.5	0
	Pyrene	mg/kg	0.5	<0.5	<0.5	0
	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0
	Anthracene	mg/kg	0.5	<0.5	<0.5	0
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a) pyrene	mg/kg	0.5	<0.5	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0
	Chrysene	mg/kg	0.5	<0.5	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0
	Fluorene	mg/kg	0.5	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0
TPH - NEPM 1999	C6 - C 9 Fraction	mg/kg	20	<20.0	<20.0	0
	C10 - C14 Fraction	mg/kg	20	<20.0	<20.0	0
	C15 - C28 Fraction	mg/kg	50	<50.0	<50.0	0
	C29 - C36 Fraction	mg/kg	50	<50.0	<50.0	0
	C10 - C36 (Sum of Total) - Lab calc	mg/kg	50	<50.0	<50.0	0
TRH - NEPM 2013	TRH F1 (TRH C6-C10 minus BTEX)	mg/kg	20	<20.0	<20.0	0
	TRH C6 - C10 Fraction	mg/kg	20	<20.0	<20.0	0
	TRH F2 (TRH C10-C16 minus Naphthalene)	mg/kg	50	<50.0	<50.0	0
	TRH >C10 - C16 Fraction	mg/kg	50	<50.0	<50.0	0
	TRH >C16 - C34 Fraction (F3)	mg/kg	100	<100.0	<100.0	0
	TRH >C34 - C40 Fraction (F4)	mg/kg	100	<100.0	<100.0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 50 (1-5 x LOR); 5
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratoary laboratory

APPENDIX C

Quality Assurance and Control Plan

QUALITY ASSURANCE AND CONTROL

A detailed Quality Assurance/Quality Control (QA/QC) assessment, including the collection and analysis of quality control samples, was completed for the data arising from the analysis of soil samples, in order to determine the suitability of the data for use in the assessment of site conditions. This included the collection of lab duplicates

Field Investigation Procedure

All fieldwork was conducted in general accordance with GeoEnviro's Standard Field Operating Procedures (FOP), which are aimed at collecting environmental samples using uniform and systematic methods, as required by GeoEnviro's Quality Assurance system. Key requirements of these procedures are as follows:

- Field staff - all field investigations were conducted by staff with sufficient and appropriate site specific training with the experience to assess and document field conditions and undertake the investigation tasks in accordance with relevant procedures. Soil types shall be recorded in accordance with the geotechnical classifications detailed in AS1726-1993 Geotechnical Site Investigations. A field log shall record the following but not limited to the following information;
    - Profile type – fill, natural, bedrock etc
    - Depths of profile type
    - Soil classification including composition, properties and characteristics.
    - Groundwater conditions.
    - Depths of samples collected.
    - Unusual or unexpected conditions including odour, colour etc.
- Field Documentation - included photographs, a field logbook to record an account of daily works and events including works start/end time, weather, presence of odours and/or dust, calibration results and checks and sample details.
- A visual and olfactory assessment was made on samples for the potential presence of contamination indicators or asbestos. Field screened for volatile organic compounds may also undertaken using a Photo-Ionisation Detector (PID).

- Notes are collected included the location and extent of fill and features such as seepage, moisture, water bearing zones, depth of groundwater tables, discolouration, staining, odours and other indications of contamination. This information was recorded on the field borehole logs.
- Decontamination procedures - included the use of new disposable gloves for the collection of each sample, decontamination of the sampling equipment between each sampling location (using DECON90 where required) and the use of dedicated sampling containers provided by the laboratory.
- Sample procedures - collected samples were immediately transferred into laboratory supplied jars of appropriate composition and preservation for the required analysis. The sample containers were transferred to a chilled cooler for sample preservation prior to and during shipment to the testing laboratory.
- Duplicate samples were collected included blind duplicates. These were coded duplicate samples submitted to the primary laboratory for analysis as individual samples without any indication to the laboratory that they have been duplicated.
- Each sample was assigned an individual sample identification number that began with a location code and site number designation for the specific sample type and sample location number. The sampling depth or interval indicates the discrete depth or interval at which the sample was taken below the surface to the nearest 0.1 metre.

Sample Custody

A Laboratory Test Request & Chain of Custody (COC) form shall be completed for each sample set collected. The form is maintained as a record of sample collection, transfer, shipment and receipt by the laboratory. When physical possession of samples is transferred, both the individual relinquishing the samples and the individual receiving them shall sign, date and record the time on the COC.

Any samples damage shall be reported to the field personnel so that resampling could take place.

Laboratory Program

The contracted laboratory used their internal procedures and NATA accredited methods in accordance with their quality assurance system. GeoEnviro reviewed the laboratory reports to ensure that the laboratory analytical methods and limits of reporting are acceptable for the analysis required. Laboratory quality control procedures used during the project include:

- **Laboratory duplicate samples**: Duplicate sub samples collected by the laboratory from one sample submitted for analytical testing at a rate equivalent to one in twenty samples per analytical batch, or one sample per batch if less than twenty samples are analysed in a batch. A laboratory duplicate provides data on the analytical precision and reproducibility of the test result.
- **Certified reference standards**: A reference standard of known (certified) concentration is analysed along with a batch of samples. The Certified Reference Standard (CRS) or Laboratory Control Spike provides an indication of the analytical accuracy and the precision of the test method and is used for inorganic analyses.
- **Spiked samples**: An authentic field sample is spiked by adding an aliquot of known concentration of the target analyte(s) prior to sample extraction and analysis. A spike documents the effect of the sample matrix on the extraction and analytical techniques. Spiked samples will be analysed for each batch where samples are analysed for organic chemicals of concern.
- **Surrogate standard/spikes**: These are organic compounds which are similar to the analyte of interest in terms of chemical composition, extractability, and chromatographic conditions (retention time), but which are not normally found in environmental samples. These surrogate compounds are spiked into blanks, standards and samples submitted for organic analyses by gas-chromatographic techniques prior to sample extraction. Surrogate Standard/Spikes provide a means of checking that no gross errors have occurred during any stage of the test method leading to significant analyte loss.

- **Laboratory blank**: Usually an organic or aqueous solution that is as free as possible of analytes of interest to which is added all the reagents, in the same volume, as used in the preparation and subsequent analysis of the samples. The reagent blank is carried through the complete sample preparation procedure and contains the same reagent concentrations in the final solution as in the sample solution used for analysis. The reagent blank is used to correct for possible contamination resulting from the preparation or processing of the sample.

The contracted laboratory conducted an assessment of the laboratory QC program internally; however, the results were independently reviewed and assessed by GeoEnviro.

APPENDIX D

Laboratory Test Certificates

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 229691

Client Details

Client	Geoenviro Consultancy Pty Ltd
Attention	Steven Goss
Address	PO Box 1543, Macquarie Centre, North Ryde, NSW, 2113

Sample Details

Your Reference	**JC16261F-r1**
Number of Samples	22 Soil
Date samples received	30/10/2019
Date completed instructions received	30/10/2019

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	06/11/2019
Date of Issue	05/11/2019

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Asbestos Approved By
Analysed by Asbestos Approved Identifier: Aida Marner
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist
Lucy Zhu, Senior Asbestos Analyst
Nancy Zhang, Laboratory Manager, Sydney

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		229691-1	229691-2	229691-3	229691-4	229691-6
Your Reference	UNITS	TP 1	TP 2	TP 3	TP 4	TP 7
Depth		0-0.1	0.0-0.1	0.1-0.2	0.2-0.3	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	89	82	93	80	89

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		229691-7	229691-8	229691-10	229691-11	229691-12
Your Reference	UNITS	TP 8	TP 10	TP 12	TP 13	TP 14
Depth		0.5-0.6	0.1-0.2	0.2-0.3	0.4-0.5	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	90	89	88	86	89

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		229691-13	229691-15	229691-17	229691-18	229691-19
Your Reference	UNITS	TP 16	TP 18	TP 21	TP 22	TP 23
Depth		0.1-0.2	0.0-0.1	0.2-0.3	0.1-0.2	0.6-0.7
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	84	85	83	83	107

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		229691-20	229691-21	229691-22
Your Reference	UNITS	TP 24	DUP A	DUP B
Depth		0.2-0.3	-	-
Date Sampled		29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	85	88	89

svTRH (C10-C40) in Soil						
Our Reference		229691-1	229691-2	229691-3	229691-4	229691-6
Your Reference	UNITS	TP 1	TP 2	TP 3	TP 4	TP 7
Depth		0-0.1	0.0-0.1	0.1-0.2	0.2-0.3	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	91	94	94	81	93

svTRH (C10-C40) in Soil						
Our Reference		229691-7	229691-8	229691-10	229691-11	229691-12
Your Reference	UNITS	TP 8	TP 10	TP 12	TP 13	TP 14
Depth		0.5-0.6	0.1-0.2	0.2-0.3	0.4-0.5	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	80	93	93	92	81

svTRH (C10-C40) in Soil						
Our Reference		229691-13	229691-15	229691-17	229691-18	229691-19
Your Reference	UNITS	TP 16	TP 18	TP 21	TP 22	TP 23
Depth		0.1-0.2	0.0-0.1	0.2-0.3	0.1-0.2	0.6-0.7
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	94	92	78	93

svTRH (C10-C40) in Soil				
Our Reference		229691-20	229691-21	229691-22
Your Reference	UNITS	TP 24	DUP A	DUP B
Depth		0.2-0.3	-	-
Date Sampled		29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019
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	<50	<50
Surrogate o-Terphenyl	%	78	92	92

PAHs in Soil						
Our Reference		229691-1	229691-2	229691-3	229691-4	229691-6
Your Reference	UNITS	TP 1	TP 2	TP 3	TP 4	TP 7
Depth		0-0.1	0.0-0.1	0.1-0.2	0.2-0.3	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	103	103	103	104	102

PAHs in Soil						
Our Reference		229691-7	229691-8	229691-10	229691-11	229691-12
Your Reference	UNITS	TP 8	TP 10	TP 12	TP 13	TP 14
Depth		0.5-0.6	0.1-0.2	0.2-0.3	0.4-0.5	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	0.1
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	%	101	98	103	91	109

PAHs in Soil						
Our Reference		229691-13	229691-15	229691-17	229691-18	229691-19
Your Reference	UNITS	TP 16	TP 18	TP 21	TP 22	TP 23
Depth		0.1-0.2	0.0-0.1	0.2-0.3	0.1-0.2	0.6-0.7
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	101	104	98	99	99

PAHs in Soil				
Our Reference		229691-20	229691-21	229691-22
Your Reference	UNITS	TP 24	DUP A	DUP B
Depth		0.2-0.3	-	-
Date Sampled		29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019
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	%	98	104	100

Organochlorine Pesticides in soil						
Our Reference		229691-1	229691-3	229691-4	229691-5	229691-6
Your Reference	UNITS	TP 1	TP 3	TP 4	TP 5	TP 7
Depth		0-0.1	0.1-0.2	0.2-0.3	0.1-0.2	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	94	95	96	93	97

Organochlorine Pesticides in soil						
Our Reference		229691-7	229691-8	229691-9	229691-10	229691-12
Your Reference	UNITS	TP 8	TP 10	TP 11	TP 12	TP 14
Depth		0.5-0.6	0.1-0.2	0.0-0.1	0.2-0.3	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	95	93	93	97	101

Organochlorine Pesticides in soil						
Our Reference		229691-13	229691-14	229691-15	229691-16	229691-17
Your Reference	UNITS	TP 16	TP 17	TP 18	TP 20	TP 21
Depth		0.1-0.2	0.0-0.1	0.0-0.1	0.0-0.1	0.2-0.3
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	96	96	98	94	92

Organochlorine Pesticides in soil					
Our Reference		229691-19	229691-20	229691-21	229691-22
Your Reference	UNITS	TP 23	TP 24	DUP A	DUP B
Depth		0.6-0.7	0.2-0.3	-	-
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	93	97	95

PCBs in Soil						
Our Reference		229691-1	229691-3	229691-4	229691-5	229691-6
Your Reference	UNITS	TP 1	TP 3	TP 4	TP 5	TP 7
Depth		0-0.1	0.1-0.2	0.2-0.3	0.1-0.2	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	94	95	96	93	97

PCBs in Soil						
Our Reference		229691-7	229691-8	229691-9	229691-10	229691-12
Your Reference	UNITS	TP 8	TP 10	TP 11	TP 12	TP 14
Depth		0.5-0.6	0.1-0.2	0.0-0.1	0.2-0.3	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	95	93	93	97	101

PCBs in Soil						
Our Reference		229691-13	229691-14	229691-15	229691-16	229691-17
Your Reference	UNITS	TP 16	TP 17	TP 18	TP 20	TP 21
Depth		0.1-0.2	0.0-0.1	0.0-0.1	0.0-0.1	0.2-0.3
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
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	%	96	96	98	94	92

PCBs in Soil					
Our Reference		229691-19	229691-20	229691-21	229691-22
Your Reference	UNITS	TP 23	TP 24	DUP A	DUP B
Depth		0.6-0.7	0.2-0.3	-	-
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	93	97	95

Acid Extractable metals in soil						
Our Reference		229691-1	229691-3	229691-4	229691-5	229691-6
Your Reference	UNITS	TP 1	TP 3	TP 4	TP 5	TP 7
Depth		0-0.1	0.1-0.2	0.2-0.3	0.1-0.2	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
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
Arsenic	mg/kg	5	8	5	<4	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	12	11	11	16
Copper	mg/kg	23	10	20	16	23
Lead	mg/kg	19	25	21	8	21
Mercury	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Nickel	mg/kg	10	8	9	6	8
Zinc	mg/kg	48	36	44	24	71

Acid Extractable metals in soil						
Our Reference		229691-7	229691-8	229691-9	229691-10	229691-12
Your Reference	UNITS	TP 8	TP 10	TP 11	TP 12	TP 14
Depth		0.5-0.6	0.1-0.2	0.0-0.1	0.2-0.3	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
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
Arsenic	mg/kg	8	6	5	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	11	10	13	15
Copper	mg/kg	20	15	13	16	15
Lead	mg/kg	20	13	15	18	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	8	5	5	6	7
Zinc	mg/kg	45	26	25	28	25

Acid Extractable metals in soil						
Our Reference		229691-13	229691-14	229691-15	229691-16	229691-17
Your Reference	UNITS	TP 16	TP 17	TP 18	TP 20	TP 21
Depth		0.1-0.2	0.0-0.1	0.0-0.1	0.0-0.1	0.2-0.3
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
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
Arsenic	mg/kg	6	6	6	8	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	13	12	11	21	12
Copper	mg/kg	17	16	25	25	28
Lead	mg/kg	18	15	15	23	18
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	6	7	10	10
Zinc	mg/kg	30	30	49	59	63

Acid Extractable metals in soil					
Our Reference		229691-19	229691-20	229691-21	229691-22
Your Reference	UNITS	TP 23	TP 24	DUP A	DUP B
Depth		0.6-0.7	0.2-0.3	-	-
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	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
Arsenic	mg/kg	6	7	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	21	7	10
Copper	mg/kg	23	24	32	13
Lead	mg/kg	16	20	13	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	12	7	5
Zinc	mg/kg	31	42	37	24

Moisture						
Our Reference		229691-1	229691-2	229691-3	229691-4	229691-5
Your Reference	UNITS	TP 1	TP 2	TP 3	TP 4	TP 5
Depth		0-0.1	0.0-0.1	0.1-0.2	0.2-0.3	0.1-0.2
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
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	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Moisture	%	6.0	7.3	6.5	9.3	2.5

Moisture						
Our Reference		229691-6	229691-7	229691-8	229691-9	229691-10
Your Reference	UNITS	TP 7	TP 8	TP 10	TP 11	TP 12
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.2-0.3
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
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	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Moisture	%	9.5	9.0	9.0	5.8	6.0

Moisture						
Our Reference		229691-11	229691-12	229691-13	229691-14	229691-15
Your Reference	UNITS	TP 13	TP 14	TP 16	TP 17	TP 18
Depth		0.4-0.5	0.0-0.1	0.1-0.2	0.0-0.1	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
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	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Moisture	%	4.9	2.3	6.6	8.1	3.6

Moisture						
Our Reference		229691-16	229691-17	229691-18	229691-19	229691-20
Your Reference	UNITS	TP 20	TP 21	TP 22	TP 23	TP 24
Depth		0.0-0.1	0.2-0.3	0.1-0.2	0.6-0.7	0.2-0.3
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
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	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Moisture	%	5.6	11	11	11	9.2

Moisture			
Our Reference		229691-21	229691-22
Your Reference	UNITS	DUP A	DUP B
Depth		-	-
Date Sampled		29/10/2019	29/10/2019
Type of sample		Soil	Soil
Date prepared	-	31/10/2019	31/10/2019
Date analysed	-	01/11/2019	01/11/2019
Moisture	%	5.7	8.5

Asbestos ID - soils						
Our Reference		229691-1	229691-3	229691-4	229691-6	229691-7
Your Reference	UNITS	TP 1	TP 3	TP 4	TP 7	TP 8
Depth		0-0.1	0.1-0.2	0.2-0.3	0.0-0.1	0.5-0.6
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-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		229691-8	229691-10	229691-12	229691-13	229691-15
Your Reference	UNITS	TP 10	TP 12	TP 14	TP 16	TP 18
Depth		0.1-0.2	0.2-0.3	0.0-0.1	0.1-0.2	0.0-0.1
Date Sampled		29/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Sample mass tested	g	Approx. 40g	Approx. 35g	Approx. 35g	Approx. 35g	Approx. 25g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-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		229691-17	229691-19	229691-20
Your Reference	UNITS	TP 21	TP 23	TP 24
Depth		0.2-0.3	0.6-0.7	0.2-0.3
Date Sampled		29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil
Date analysed	-	01/11/2019	01/11/2019	01/11/2019
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-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
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil						
Our Reference		229691-1	229691-3	229691-7	229691-10	229691-12
Your Reference	UNITS	TP 1	TP 3	TP 8	TP 12	TP 14
Depth		0-0.1	0.1-0.2	0.5-0.6	0.2-0.3	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019
pH 1:5 soil:water	pH Units	9.2	6.5	6.0	5.5	6.1

Misc Inorg - Soil				
Our Reference		229691-15	229691-17	229691-19
Your Reference	UNITS	TP 18	TP 21	TP 23
Depth		0.0-0.1	0.2-0.3	0.6-0.7
Date Sampled		29/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil
Date prepared	-	01/11/2019	01/11/2019	01/11/2019
Date analysed	-	01/11/2019	01/11/2019	01/11/2019
pH 1:5 soil:water	pH Units	6.1	6.6	6.1

CEC				
Our Reference		229691-1	229691-7	229691-12
Your Reference	UNITS	TP 1	TP 8	TP 14
Depth		0-0.1	0.5-0.6	0.0-0.1
Date Sampled		04/10/2019	29/10/2019	29/10/2019
Type of sample		Soil	Soil	Soil
Date prepared	-	04/11/2019	04/11/2019	04/11/2019
Date analysed	-	04/11/2019	04/11/2019	04/11/2019
Exchangeable Ca	meq/100g	37	9.7	5.6
Exchangeable K	meq/100g	0.5	0.9	0.9
Exchangeable Mg	meq/100g	4.6	3.5	3.4
Exchangeable Na	meq/100g	0.12	<0.1	<0.1
Cation Exchange Capacity	meq/100g	42	14	10

ESP/CEC		
Our Reference		229691-17
Your Reference	UNITS	TP 21
Depth		0.2-0.3
Date Sampled		29/10/2019
Type of sample		Soil
Date prepared	-	04/11/2019
Date analysed	-	04/11/2019
Exchangeable Ca	meq/100g	4.4
Exchangeable K	meq/100g	0.2
Exchangeable Mg	meq/100g	5.1
Exchangeable Na	meq/100g	0.70
Cation Exchange Capacity	meq/100g	10
ESP	%	7

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.
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-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
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-8	229691-3
Date extracted	-			31/10/2019	1	31/10/2019	31/10/2019		31/10/2019	31/10/2019
Date analysed	-			01/11/2019	1	01/11/2019	01/11/2019		01/11/2019	01/11/2019
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	91	97
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	91	97
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	76	79
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	94	98
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	97	104
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	95	102
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	96	106
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	75	1	89	89	0	95	87

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]	12	31/10/2019	31/10/2019		[NT]	[NT]
Date analysed	-			[NT]	12	01/11/2019	01/11/2019		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	12	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	12	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	12	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	12	89	90	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	229691-3
Date extracted	-			31/10/2019	1	31/10/2019	31/10/2019		31/10/2019	31/10/2019
Date analysed	-			01/11/2019	1	01/11/2019	01/11/2019		01/11/2019	01/11/2019
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	130	130
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	126	111
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	123	71
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	130	130
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	126	111
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	123	71
Surrogate o-Terphenyl	%		Org-003	79	1	91	94	3	118	94

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	31/10/2019	31/10/2019		[NT]	[NT]
Date analysed	-			[NT]	12	01/11/2019	01/11/2019		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	12	81	78	4	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	229691-3
Date extracted	-			31/10/2019	1	31/10/2019	31/10/2019		31/10/2019	31/10/2019
Date analysed	-			01/11/2019	1	01/11/2019	01/11/2019		01/11/2019	01/11/2019
Naphthalene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	108	101
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	102	98
Phenanthrene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	108	101
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	108	99
Pyrene	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	110	101
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	104	96
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	100	87
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	102	1	103	102	1	109	101

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	31/10/2019	31/10/2019		[NT]	[NT]
Date analysed	-			[NT]	12	01/11/2019	01/11/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	12	0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	12	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	12	109	105	4	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	229691-3
Date extracted	-			31/10/2019	1	31/10/2019	31/10/2019		31/10/2019	31/10/2019
Date analysed	-			01/11/2019	1	01/11/2019	01/11/2019		01/11/2019	01/11/2019
alpha-BHC	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	114	112
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	98	92
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	100	94
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	110	103
Heptachlor Epoxide	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	106	98
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	110	99
Dieldrin	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	124	106
Endrin	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	110	99
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	104	96
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	106	94
Methoxychlor	mg/kg	0.1	Org-012/017	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	95	1	94	97	3	98	94

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	31/10/2019	31/10/2019		[NT]	[NT]
Date analysed	-			[NT]	12	01/11/2019	01/11/2019		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-012/017	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	[NT]	12	101	98	3	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	229691-3
Date extracted	-			31/10/2019	1	31/10/2019	31/10/2019		31/10/2019	31/10/2019
Date analysed	-			01/11/2019	1	01/11/2019	01/11/2019		01/11/2019	01/11/2019
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	111	105
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	95	1	94	97	3	98	94

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	31/10/2019	31/10/2019		[NT]	[NT]
Date analysed	-			[NT]	12	01/11/2019	01/11/2019		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	[NT]	12	101	98	3	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	229691-3
Date prepared	-			31/10/2019	1	31/10/2019	31/10/2019		31/10/2019	31/10/2019
Date analysed	-			31/10/2019	1	31/10/2019	31/10/2019		31/10/2019	31/10/2019
Arsenic	mg/kg	4	Metals-020	<4	1	5	5	0	107	85
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	108	85
Chromium	mg/kg	1	Metals-020	<1	1	9	10	11	111	85
Copper	mg/kg	1	Metals-020	<1	1	23	23	0	109	101
Lead	mg/kg	1	Metals-020	<1	1	19	17	11	112	88
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	106	108
Nickel	mg/kg	1	Metals-020	<1	1	10	9	11	109	89
Zinc	mg/kg	1	Metals-020	<1	1	48	48	0	110	78

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	12	31/10/2019	31/10/2019		[NT]	[NT]
Date analysed	-			[NT]	12	31/10/2019	31/10/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	12	5	5	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	12	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	12	15	14	7	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	12	15	15	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	12	14	16	13	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	12	7	8	13	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	12	25	27	8	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date prepared	-			01/11/2019	7	01/11/2019	01/11/2019		01/11/2019	[NT]
Date analysed	-			01/11/2019	7	01/11/2019	01/11/2019		01/11/2019	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	7	6.0	6.0	0	102	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			04/11/2019	[NT]	[NT]	[NT]	[NT]	04/11/2019	[NT]
Date analysed	-			04/11/2019	[NT]	[NT]	[NT]	[NT]	04/11/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: ESP/CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			04/11/2019	[NT]	[NT]	[NT]	[NT]	04/11/2019	[NT]
Date analysed	-			04/11/2019	[NT]	[NT]	[NT]	[NT]	04/11/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	98	[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: 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 requested for asbestos testing were sub-sampled from jars provided by the client.

Envirolab Services Pty Ltd
ABN 37 112 535 645
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	Geoenviro Consultancy Pty Ltd
Attention	Steven Goss

Sample Login Details

Your reference	JC16261F-r1
Envirolab Reference	229691
Date Sample Received	30/10/2019
Date Instructions Received	30/10/2019
Date Results Expected to be Reported	06/11/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	22 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	21.4
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:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils	Misc Inorg - Soil	CEC	ESP/CEC
TP 1-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	
TP 2-0.0-0.1	✓	✓	✓							
TP 3-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓		
TP 4-0.2-0.3	✓	✓	✓	✓	✓	✓	✓			
TP 5-0.1-0.2				✓	✓	✓				
TP 7-0.0-0.1	✓	✓	✓	✓	✓	✓	✓			
TP 8 -0.5-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	
TP 10-0.1-0.2	✓	✓	✓	✓	✓	✓	✓			
TP 11-0.0-0.1				✓	✓	✓				
TP 12-0.2-0.3	✓	✓	✓	✓	✓	✓	✓	✓		
TP 13-0.4-0.5	✓	✓	✓							
TP 14-0.0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	
TP 16 -0.1-0.2	✓	✓	✓	✓	✓	✓	✓			
TP 17 -0.0-0.1				✓	✓	✓				
TP 18 -0.0-0.1	✓	✓	✓	✓	✓	✓	✓	✓		
TP 20 -0.0-0.1				✓	✓	✓				
TP 21 -0.2-0.3	✓	✓	✓	✓	✓	✓	✓	✓		✓
TP 22 -0.1-0.2	✓	✓	✓							
TP 23 -0.6-0.7	✓	✓	✓	✓	✓	✓	✓	✓		
TP 24 -0.2-0.3	✓	✓	✓	✓	✓	✓	✓			
DUP A	✓	✓	✓	✓	✓	✓				
DUP B	✓	✓	✓	✓	✓	✓				

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.

GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia
Tel: (02) 96798733 Fax: (02) 96798744

Laboratory Test Request/Chain of Custody Record

Job Details
Job Number: JC16261F-r1
Client:
Project: Proposed Landscaping Development
Location: St Francis Catholic College, Jardine Drive, Edmondson Park
Sample Date: 29/10/2019
Sampled By: SG
Project Manager: SL
Store Location:

External Laboratory Details:
Laboratory name: Envirolab Services Pty Ltd
Address: 12 Ashley Street
Chatswood
Contact: Tania Notaris

Sampling Details				Sample Type		Test Required (\)														Test Performed(X)									
Location		Depth (m)		Soil	Water	Metals (As Cd Cr Cu Pb Zn Ni Hg)	OCP / PCB	Combination 12a	Combination 5a	Combination 5	TRH/PAH/BTEX		pH	EC	CEC	Cl / SO4	Resistivity												Keep Sample
		From	To																										
1	TP 1	0.00	0.10	DG					/				/		/														
2	TP 2	0.10	0.20	DG							/		/																
3	TP 3	0.20	0.30	DG					/				/																
4	TP 4	0.10	0.20	DG					/																				
5	TP 5	0.00	0.10	DG		/	/																						
6	TP 7	0.50	0.60	DG					/																				
7	TP 8	0.70	0.80	DG					/				/		/														
8	TP 10	0.10	0.20	DG					/																				
9	TP 11	0.00	0.10	DG		/	/																						
10	TP 12	0.20	0.30	DG					/				/																
11	TP 13	0.40	0.50	DG							/		/																
12	TP 14	0.00	0.10	DG					/				/		/														
13	TP 16	0.10	0.20	DG					/																				
14	TP 17	0.00	0.10	DG		/	/																						
15	TP 18	0.00	0.10	DG					/				/																

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

Job No: 279691
Date Received: 30/10/19
Time Received: 15:40
Received By: MM
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by				Received By CLAIRE MULLENGER			
Laboratory	Name	Signature	Date	Laboratory ELS SYDNEY	Name	Signature	Date
GeoEnviro Consultancy	Steven Goss	SMGoss	30/10/2019		CLAIRE MULLENGER	Claire Mullenger	30/10/19 15:40

Legend

DB Disturbed Sample (Bulk, Plastic bag)
DS Disturbed Sample (Small, Plastic bag)
DG Disturbed Sample (Glass Jar)
STP Standard Penetration Test Sample
U50 Undisturbed Sample, 50mm Tube
U75 Undisturbed Sample, 75mm Tube
WG Water Sample, Amber Glass Jar
WP Water Sample, Plastic Bottle
Y Keep Sample
N Discard Sample

GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia
Tel: (02) 96798733 Fax: (02) 96798744

279691.

Laboratory Test Request/Chain of Custody Record

Job Details
Job Number: JC16261F-r1
Client:
Project: Proposed Landscaping Development
Location: St Francis Catholic College, Jardine Drive, Edmondson Park
Sample Date: 29/10/2019
Sampled By: SG
Project Manager: SL
Store Location:

External Laboratory Details:
Laboratory name: Envirolab Services Pty Ltd
Address: 12 Ashley Street
Chatswood
Contact: Tania Notaris

Sampling Details			Sample Type		Test Required (\) / Test Performed(X)																						
Location	Depth (m)		Soil	Water	Metals (As Cd Cr Cu Pb Zn Ni Hg)	OCP / PCB	Combination 12a	Combination 5a	Combination 5	TRH/PAH/BTEX		pH	EC	CEC/ESP	Cl / SO4	Resistivity											Keep Sample
	From	To																									
16 TP 20	0.00	0.10	DG		/	/																					
17 TP 21	0.20	0.30	DG					/				/		/													
18 TP 22	0.10	0.20	DG							/																	
19 TP 23	0.60	0.70	DG					/				/															
20 TP 24	0.20	0.30	DG					/																			
21 DUP A	-	-	DG						/																		
22 DUP B	-	-	DG						/																		

Relinquished by				Received By				
Laboratory	Name	Signature	Date	Laboratory	Name	Signature	Date	
GeoEnviro Consultancy	Steven Goss	SMGoss	30/10/2019	ELS Sydney				
							30/10/19 1545.	

Legend

DB Disturbed Sample (Bulk, Plastic bag)
DS Disturbed Sample (Small, Plastic bag)
DG Disturbed Sample (Glass Jar)
STP Standard Penetration Test Sample
U50 Undisturbed Sample, 50mm Tube
U75 Undisturbed Sample, 75mm Tube
WG Water Sample, Amber Glass Jar
WP Water Sample, Plastic Bottle
Y Keep Sample
N Discard Sample

APPENDIX E

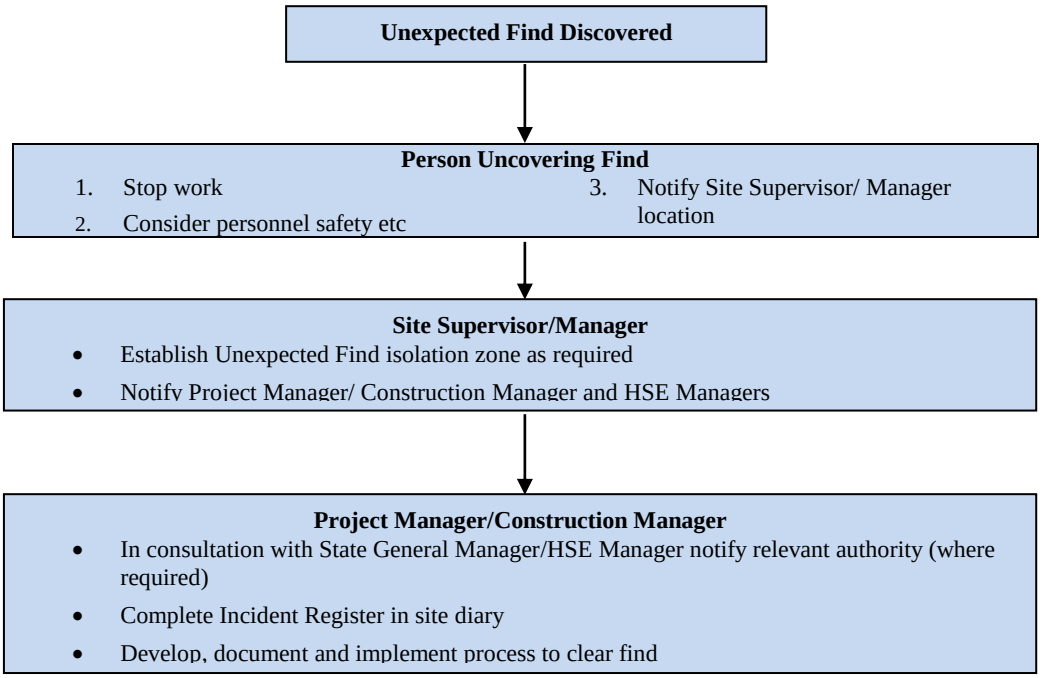
Unexpected Finds Protocol

GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia
PO Box 1543, Macquarie Centre. North Ryde, NSW 2113

ABN 62 084 294 762
Tel : (02) 9679 8733
Fax : (02) 9679 8744

UNEXPECTED FINDS PROTOCOL

ITEM	REQUIREMENTS
DEFINITION	An unexpected find may be identified as a result of site activity, for example through earthworks and movement of plant on site including preparatory site works.
SITE SUPERVISOR	On being notified of an **Unexpected Find**, the Principal Contractor must: • Stop work & notify the site manager/HSE coordinator as soon as practically possible. • Ensure the find is not further disturbed. • Ensure all personnel are removed from the area with the exception of personnel required to isolate or make safe the area. • Establish an "unexpected find" isolation zone as required to prevent or minimise exposure risks for site personnel, members of the public, fauna or flora. Note: Persons are not to expose themselves to further risk whilst establishing isolation zone. • Assess the requirement to evacuate areas or the entire site. • Co-ordinate site or area evacuation as assessed. Note: It is preferable to evacuate the whole site if there is any doubt as to the safety of personnel or the environment. • As soon as the safety of personnel, environment & the site is secured the Site Manager/Supervisor should notify their relevant HSE Manager, Project Manager & Construction Manager. • As soon as practically possible record the events associated with the unexpected find.
PROJECT MANAGER	The Project Manager and/or HSE Manager in consultation with the relevant General Manager notify regulatory authorities as required. Establish a risk based process for managing clearance of the unexpected find & establishing incident investigation.
	The Project Manager or HSE Manager must also ensure that the find is reported to the Principal. This may be by verbal communication.
UNEXPLODED ORDNANCE	• Do not touch or disturb. • Contact Police immediately.
UNEXPECTED SERVICES **(LIVE OR DISUSED)**	• This may include power, gas or fuel. • Do not touch or further disturb. • The area must be immediately designated a non-smoking and "no naked flames" area. • All nearby machinery should be turned off. • Contact relevant governing authority. • Contact appropriate trade supervisor.
ASBESTOS OR OTHER CONTAMINANTS	Products made from asbestos cement not only include fibro sheeting (flat and corrugated), but items such as water, drainage and flue pipes, roofing shingles and gutters. • Do not touch or further disturb. • Isolate area (10 metre isolation zone required for asbestos). • Contact hygienist. • Implement hygienist's recommendations. • If persons have been exposed arrange medical advice/consultation i.e. possible asbestos fibre exposure will require lung function test & chest x-ray. Note: This applies more specifically to friable type asbestos rather than non friable asbestos containing material however if any doubt exists treat as friable. • Obtain clearance from hygienist prior to re-entering area.
	Non-Friable Asbestos Over 97% of the products in Australia were non-friable material in which the Asbestos fibres were bonded by cement, vinyl, resin or other similar material. **Friable Asbestos** The hazardous friable asbestos is material which can be crumbled, pulverised, or reduced to powder by hand pressure. This may also include previously non-friable material which becomes broken or damaged by mechanical force.

ITEM	REQUIREMENTS
HUMAN REMAINS	• Do not touch or disturb. • Contact Police immediately. Please note that aboriginal burial objects (such as bark coffins) are defined by legislation as human remains.
HERITAGE ITEMS	• Do not touch or disturb. • Contact Heritage Office or relevant State or Local Government Authority.
OBJECTS OF POSSIBLE CULTURAL SIGNIFICANCE	• Do not touch or disturb. Contact Department of Indigenous Affairs or relevant State or Local Government Authority.
UNEXPECTED FIND PROCESS	

APPENDIX F

Important Information about your Environmental Site Assessment
Explanatory Notes

GeoEnviro Consultancy Pty Ltd
Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia
PO Box 1543, Macquarie Centre. North Ryde, NSW 2113
ABN: 62 084 294 762
Tel: (02) 9679 8733
Fax: (02) 9679 8744
Email: geoenviro@exemail.com.au

IMPORTANT INFORMATION REGARDING YOUR ENVIRONMENTAL SITE ASSESSMENT

This Environmental Assessment Report was performed in general conformance with our understanding of the guidelines by the Australian and New Zealand Conservation Council (ANZECC), the Office of Environment and Heritage (OEH) and the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013).

These accompanying notes have been prepared by GeoEnviro Consultancy Pty Ltd, using guidelines prepared by ASFE; The Association of Engineering Firms Practising in the Geosciences. The notes are offered as an aid in the interpretation of your environmental site assessment report.

REASONS FOR AN ENVIRONMENTAL SITE ASSESSMENT

Environmental site assessments are typically, though not exclusively, performed in the following circumstances:

- As a pre- acquisition assessment on behalf of either a purchaser or a vendor, when a property is to be sold
- As a pre-development assessment, when a property or area of land is to be redeveloped, or the land use has change, eg from a factory to a residential subdivision
- As a pre-development assessment of greenfield sites, to establish baseline conditions and assess environmental, geological and hydrological constraints to the development of, eg, a landfill
- As an audit of the environmental effects of previous and present site usage

Each circumstance requires a specific approach to the assessment of soil and groundwater contamination. In all cases the objective is to identify and if possible, quantify the risks which unrecognised contamination poses to the ongoing or proposed activity. Such risk may be both financial (clean-up costs or limitations in site use) and physical (health risks to site users or the public).

ENVIRONMENTAL SITE ASSESSMENT LIMITATIONS

Although information provided by an environmental 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 within a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which did not show signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur, only the most likely contaminants are screened.

AN ENVIRONMANTAL SITE ASSESSMENT REPORT IS BASED ON A UNIQUE SET OF PROJECT SPECIFIC FACTORS

Your environmental assessment report should not be used;

- When the nature of the proposed development is changed, eg, if a residential development is proposed, rather than a commercial development
- When the size or configuration of the proposed development is altered, eg, if a basement is added
- When the location or orientation of the proposed structure is modified
- When there is a change of land ownership, or
- For application to an adjacent site

In order to avoid costly problems, you should ask your consultant to assess any changes in the project since the assessment and the implications, if any, to recommendations made in the assessment.

ENVIRONMENTAL SITE ASSESSMENT FINDINGS ARE PROFESSIONAL ESTIMATES

Site assessment identifies actual sub-surface conditions only at those points where samples are taken, when they are taken. Data obtained from the sampling and subsequent laboratory analyses are interpreted by geologists, engineers or scientist and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on any proposed development and appropriate remediation measures. Actual conditions may differ from those inferred, because no professional, no matter how qualified and no sub-surface 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, however, steps can be taken to help minimise the impact. For this reason, site owner should retain the services of their consultants throughout the development stage of the project in order to identify variances, conduct additional tests which may be necessary and to recommend solutions to problems encountered on site.

Soil and groundwater contamination is a field in which legislation and interpretation of legislation by government departments is changing rapidly. Whilst every attempt is made by GeoEnviro Consultancy Pty Ltd to be familiar with current policy, our interpretation of the investigation findings should not be taken to be that of the relevant authority. When approval from a statutory authority is required for a project, that approval should be directly sought.

STABILITY OF SUB-SURFACE CONDITIONS

Sub-surface conditions can change by natural processes and site activities. As an environmental site assessment is based on conditions existing at the time of the investigation, project decisions should not be based on environmental site assessment data which may have been affected by time. The consultant should be requested to advise if additional tests are required.

ENVIRONMENTAL SITE ASSESSMENTS ARE PERFORMED FOR SPECIFIC PURPOSES AND CLIENTS

Environmental site assessments are prepared in response to a specific scope of work required to meet the specific needs or specific individuals. An assessment prepared for a consulting civil engineer may not be adequate to a construction contractor or another civil engineer.

An assessment should not be used by other persons for any purpose, or by the client for a different purposes. No individual, other than the client, should apply an assessment, even for its intended purposes, without first conferring with the consultant. No person should apply an assessment for any purposes other than that originally contemplated, without first conferring with the consultant.

MISINTERPRETATION OF ENVIRONMENTAL SITE ASSESSMENTS

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

LOGS SHOULD NOT BE SEPARATED FORM THE REPORT

Borehole and test pit logs are prepared by environmental scientists, engineers or geologist, based upon interpretation of field conditions and laboratory evaluation of field samples. Field logs normally provided in our reports and these should not be redrawn 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 test of the assessment. Should this occur, delays and disputes , or unanticipated costs may result.

To reduce the likelihood of boreholes and test pit logs 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 sub-surface 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

An environmental site assessment is based extensively on judgement and opinion, therefore, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claim being lodged against consultants. In order to aid in prevention of 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 happy to give full and frank answers to any questions you may have.

EXPLANATORY NOTES

Introduction

These notes have been provided to amplify the geotechnical report with regard to investigation procedures, classification methods and certain matters relating to the Discussion and Comments sections. Not all notes are necessarily relevant to all reports.

Geotechnical reports are based on information gained from finite sub-surface probing, excavation, boring, sampling or other means of investigation, supplemented by experience and knowledge of local geology. For this reason they must be regarded as interpretative rather than factual documents, limited to some extent by the scope of information on which they rely.

Description and Classification Methods
The methods the description and classification of soils and rocks used in this report are based on Australian standard 1726, the SSA Site investigation Code, in general descriptions cover the following properties - strength or density, colour, structure, soil or rock type and inclusions. Identification and classification of soil and rock involves to a large extent, judgement within the acceptable level commonly adopted by current geotechnical practices.

Soil types are described according to the predominating particle size, qualified by the grading or other particles present (eg sandy clay) on the following bases:

Soil Classification	Particle Size
Clay	Less than 0.002mm
Silt	0.002 to 0.6mm
Sand	0.6 to 2.00mm
Gravel	2.00m to 60.00mm

Soil Classification	Particle size
Clay	less than 0.002mm
Silt	0.002 to 0.06mm
Sand	0.06 to 2.00mm
Gravel	2.00mm to 60.00mm

Cohesive soils are classified on the basis of strength, either by laboratory testing or engineering examination. The strength terms are defined as follows:

Classification	Undrained Shear Strength kPa
Very Soft	Less than 12
Soft	12 - 25
Firm	25 - 50
Stiff	50 - 100
Very Stiff	100 - 200
Hard	Greater than 200

Non-cohesive soils are classified on the basis of relative density, generally from the results of standard penetration tests (SPT) or Dutch cone penetrometer test (CPT), as below:

Relative Dense	SPT 'N' Value (blows/300mm)	CPT Cone Value (q_c-Mpa)
Very Loose	Less than 5	Less than 2
Loose	5 - 10	2 - 5
Medium Dense	10 - 30	5 - 15
Dense	30 - 50	15 - 25
Very Dense	> 50	> 25

Rock types are classified by their geological names, together with descriptive terms on degrees of weathering strength, defects and other minor components. Where relevant, further information regarding rock classification, is given on the following sheet.

Sampling
Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provided information on plasticity, grained size, colour, type, moisture content, inclusions and depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin walled sample tube (normally know as U_{50}) into the soil and withdrawing a sample of the soil in a relatively undisturbed state. Such Samples yield information on structure and strength and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils. Details of the type and method of sampling are given in the report.

Field Investigation Methods
The following is a brief summary of investigation methods currently carried out by this company and comments on their use and application.

Hand Auger Drilling
The borehole is advanced by manually operated equipment. The diameter of the borehole ranges from 50mm to 100mm. Penetration depth of hand augered boreholes may be limited by premature refusal on a variety of materials, such as hard clay, gravels or ironstone.

Test Pits
These are excavated with a tractor-mounted backhoe or a tracked excavator, allowing close examination of the insitu soils if it is safe to descend into the pit. The depth of penetration is limited to about 3.0m for a backhoe and up to 6.0m for an excavator. A potential disadvantage is the disturbance caused by the excavation.

Care must be taken if construction is to be carried out near, or within the test pit locations, to either adequately recompact the backfill during construction, or to design the structure or accommodate the poorly compacted backfill.

Large Diameter Auger (eg Pengo)
The hole is advanced by a rotating plate or short spiral auger generally 300mm or larger in diameter. The cuttings are returned to the surface at intervals (generally of not more than 05m) and are disturbed, but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers and is usually supplemented by occasional undisturbed tube sampling.

Continuous Spiral Flight Augers
The hole is advanced by using 90mm - 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling or insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the augers flights, but they are very disturbed and may be highly mixed with soil of other stratum.

Information from the drilling (as distinct from specific sampling by SPT or undisturbed samples) is of relatively low reliability due to remoulding, mixing or softening of samples by ground water, resulting in uncertainties of the original sample depth.

Continuous Spiral Flight Augers (continued)
The spiral augers are usually advanced by using a V - bit through the soil profile refusal, followed by Tungsten Carbide (TC) bit, to penetrate into bedrock. The quality and continuity of the bedrock may be assessed by examination of the recovered rock fragments and through observation of the drilling penetration resistance.

Non - core Rotary Drilling (Wash Boring)
The hole is advanced by a rotary bit, with water being pumped down the drill rod and returned up the annulus, carrying the cuttings, together with some information from the "feel" and rate of penetration.

Rotary Mud Stabilised Drilling
This is similar to rotary drilling, but uses drilling mud as a circulating fluid, which may consist of a range of products, from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling (eg SPT and U_{50} samples).

Continuous Core Drilling
A continuous core sample is obtained using a diamond tipped core barrel. Providing full core recovery is achieved (which is not always possible in very weak rock and granular soils) this technique provides a very reliable (but relatively expensive) method of investigation. In rocks an NMLC triple tube core barrel which gives a core of about 50mm diameter, is usually used with water flush.

Portable Proline Drilling
This is manually operated equipment and is only used in sites which require bedrock core sampling and there is restricted site access to truck mounted drill rigs. The boreholes are usually advanced initially using a tricone roller bit and water circulation to penetrate the upper soil profile. In some instances a hand auger may be used to penetrate the soil profile. Subsequent drilling into bedrock involves the use of NMLC triple tube equipment, using water as a lubricant.

Standard Penetration Tests
Standard penetration tests are used mainly in non-cohesive soils, but occasionally also in cohesive soils, as a means of determining density or strength and of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289 "Methods of testing Soils for Engineering Purpose"- Test F31.

The test is carried out in a borehole by driving a 50mm diameter split sample tube under the impact of a 63Kg hammer with a free fall of 769mm. It is normal for the tube to be driven in three successive 150mm increments and the "N" value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rocks, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In a case where full penetration is obtained with successive blows counts for each 150mm of, say 4, 6, and 7 blows.

  as 4, 6, 7
  N = 13

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm.

  as 15,30/40mm

The results of the tests can be related empirically to the engineering properties of the soil. Occasionally the test methods is used to obtain samples in 50mm diameter thin walled samples tubes in clays. In these circumstances, the best results are shown on the bore logs in brackets.

Dynamic Cone Penetration Test
A modification to the SPT test is where the same driving system is used with a solid 60^0 tipped steel cone of the same diameter as the SPT hollow sampler. The cone can be continuously driven into the borehole and is normally used in areas with thick layers of soft clays or loose sand. The results of this test are shown as 'N_c' on the bore logs, together with the number of blows per 150mm penetration.

Cone Penetrometer Testing and Interpretation
Cone penetrometer testing (sometimes referred to as Dutch Cone-CPT) described in this report, has been carried out using an electrical friction cone penetrometer and the test is described in Australian Standard 1289 test F5.1.

In the test, a 35mm diameter rod with cone tipped end is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig, which is fitted with a hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the friction resistance on a separate 130mm long sleeve, immediately behind the cone. Transducer in the tip of the assembly are connected by electrical wires passing through the centre of the push rods to an amplifier and recorder unit mounted on the control truck.

As penetration occurs (at a rate of approximately 20mm per second) the information is output on continuous chart recorders. The plotted results in this report have been traced from the original records. The information provided on the charts comprises:

- Cone resistance - the actual end bearing force divided by the cross sectional area of the cone, expressed in Mpa.
- Sleeve friction - the frictional force on the sleeve divided by the surface area, expressed in kPa.
- Friction ratio - the ratio of sleeve friction to cone resistance, expressed in percentage.

There are two scales available for measurement of cone resistance. The lower "A" scale (0-5Mpa) is used in very soft soils where increased sensitivity is required and is shown in the graphs as a dotted line. The main "B" scale (0-50Mpa) is less sensitive and is shown as a full line.

The ratios of the sleeve resistance to cone resistance will vary with the type of soil encountered, with higher relative frictions in clays than in sands. Friction ratios of 1% to 2% are commonly encountered in sands and very soft clays, rising to 4% to 10% in stiff clays.

In sands, the relationship between cone resistance and SPT value is commonly in the range:

$$q_c \text{ (Mpa)} = (0.4 \text{ to } 0.6)\ N \text{ (blows per 300mm)}$$

In clays the relationship between undrained shear strength and cone resistance is commonly in the range:

$$q_c = (12 \text{ to} 18)\ C_u$$

Interpretation of CPT values can also be made to allow estimate of modulus or compressibility values to allow calculation of foundation settlements. Inferred stratification, as shown on the attached report, is assessed from the cone and friction traces, from experience and information from nearby boreholes etc.

Cone Penetrometer Testing and Interpretation continued
This information is presented for general guidance, but must be regarded as being to some extent interpretive. The test method provides a continuous profile of engineering properties and where precise information or soil classification is required, direct drilling and sampling may be preferable.

Portable Dynamic Cone Penetrometer (AS1289)
Portable dynamic cone penetrometer tests are carried out by driving a rod in to the ground with a falling weight hammer and measuring the blows per successive 100mm increments of penetration.

There are two similar tests, Cone Penetrometer (commonly known as Scala Penetrometer) and the Perth Sand Penetrometer. Scala Penetrometer is commonly adopted by this company and consists of a 16mm rod with a 20mm diameter cone end, driven with a 9kg hammer, dropping 510mm (AS 1289 Test F3.2).

Laboratory Testing
Laboratory testing is carried out in accordance with Australian Standard 1289 "Methods of Testing Soil for Engineering Purposes". Details of the test procedures are given on the individual report forms.

Engineering Logs
The engineering logs presented herein are an engineering and/or geological interpretation of the sub-surface conditions and their reliability will depend to some extent on frequency of sampling and the method of drilling. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, however, this is not always practicable or possible to justify economically. As it is, the boreholes represent only a small sample of the total sub-surface profile. Interpretation of the information and its application to design and construction should take into account the spacing of boreholes, frequency of sampling and the possibility of other than "straight line" variations between the boreholes.

Ground water
Where ground water levels are measured in boreholes, there are several potential problems:
- In low permeability soils, ground water although present, may enter the hole slowly, or perhaps not at all, during the investigation period.
- A localised perched water table may lead to a erroneous indication of the true water table.
- Water table levels will vary from time to time, due to the seasons or recent weather changes. They may not be the same at the time of construction as indicated in the report.
- The use of water or mud as a drilling fluid will mask any ground water inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole if any water observations are to be made.

More reliable measurements can be made by installing stand pipes, which are read at intervals over several days, or weeks for low permeability soils. Piezometers sealed in a particular stratum may be interference from a perched water table or surface water.

Engineering Reports
Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal is changed, say to a twenty storey building. If this occurs, the company will be pleased to review the report and sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of sub-surface conditions, discussions of geotechnical aspects and recommendations or suggestions for design and construction. However, the company cannot always anticipate or assume responsibility for:
- Unexpected variations in ground conditions. The potential for this will depend partly on bore spacing and sampling frequency.
- Changes in policy or interpretation of policy by statutory authorities.
- The actions of contractors responding to commercial pressures.

If these occur, the company will be pleased to assist with investigation or advice to resolve the matter.

Site Anomalies
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, the company request immediate notification. Most problems are much more readily resolved when conditions are exposed than at some later stage, well after the event.

Reproduction of Information for Contractual Purposes
Attention is drawn to the document “Guidelines for the Provision of Geotechnical Information trader Documents”, published by the Institute of Engineers Australia. Where information obtained for this investigation is provided for tender purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or make additional copies of the report available for contract purpose, at a nominal charge.

Site Inspection

The Company will always be pleased to provide engineering inspection services for geotechnical aspect of work to which this report is related. This could range from a site visit to confirm that the conditions exposed are as expected, to full time engineering presence on site

Review of Design
Where major civil or structural developments are proposed, or where only a limited investigation has been completed, or where the geotechnical conditions are complex, it is prudent to have the design reviewed by a Senior Geotechnical Engineer.