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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 STRATHFIELD NSW 2137

Ref: JC15236A

July 2015



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7th July 2015

Our Ref: JC15236A-r1(rev)

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

Attention: Mr Gary Case

Dear Sir

**Re Contamination Assessment
Proposed School Facilities Development
Lot 21 DP 29317, No 150 Jardine Drive, Edmondson Park**

We are pleased to submit our Contamination Assessment report for the proposed school facilities to be constructed at the above address.

Should you have any queries, please contact the undersigned.

Yours faithfully
GeoEnviro Consultancy Pty Ltd

Solern Liew CPEng (NPER)
Director

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1. INTRODUCTION

This report presents the results of a contamination assessment for the site identified as Lot 21 DP 29317, No 150 Jardine Drive Edmondson Park, as shown on Drawing No 1. The investigation was commissioned by Mr Gary Case of Jenga Star Investments Pty Ltd in his Email dated 3rd June 2015, who is also acting on behalf of the Trustee for the Wollongong Diocese Catholic School System.

We understand that the site will be redeveloped into a school. This study is required as a prerequisite to the processing of a Development Application by Council for the development of the site.

The objective of this study was to determine if significant subsurface soil contamination is likely to exist on site that may present a risk to human health and/or the environment as a result of previous and current land use.

2. SCOPE OF WORK

The preliminary 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 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

3. SITE INFORMATION

3.1 Site Location

The site is known as Lot 21 in DP 29317 and located at No 150 Jardine Drive in Edmondson Park as shown on Drawing No 1. The site has a trapezoidal shape with an approximate 60m frontage to Jardine Drive and extends about 210m and 290m to the approximate 160m rear southern boundary. Total site area is approximately 1.8 hectares.

The site is within the jurisdiction of Liverpool City Council, Parish of Minto and County of Cumberland. The adjoining and surrounding properties consist of semi-rural residential properties except the south where residential subdivision development was in progress.

3.2 Site Topography and Geological Setting

The site is situated on gently undulating terrain. Ground surface within the site has a gentle slope of about 1 to 3 degrees towards the north. Based on the Google earth, ground surface within the site is between 58m and 67m above sea level.

The 1:100,000 Soil Landscape of Penrith Series 9030 (Reference 1) 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 Series 9030 (Reference 2) 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 Hydrogeology

Topography, surface cover and geology control the hydrogeology of the site. It is anticipated that the majority of rainfall runoff will flow towards the north west and into Cabramatta Creek which has tributaries on adjoining lots to the north west.

Groundwater is also expected to flow in a general direction towards Cabramatta Creek. Due to the relatively impervious nature of the underlying subsurface soil and bedrock, rainfall runoff infiltrating through the subsurface soil and bedrock profiles is expected to be minimal.

Based on our local knowledge and previous investigation of the general surrounding area, we expect permanent groundwater table to be at a significant depth (i.e. in excess of 3m from ground surface.) however localised perched water tables may be present in areas of fill or in close proximity to the creek line.

Our search of the NSW Department Infrastructure, Planning and Natural Resources groundwater database for the region indicates no groundwater bores within 1km from the site.

Groundwater is not considered to be a significant resource for the general area. Refer to Appendix B for Groundwater works summary.

3.4 Site Inspection and Description

A site visit was carried out on the 11th of June 2015 by an environmental engineer to observe existing site features and identify obvious or suspected areas of potential contamination. Reference should be made to Drawing No 1 for site features and locations.

At the time of our investigation, the site consisted of two residential dwellings with sheds/garages, a large dam and poultry shed.

Site Features	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 sty
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

4. SITE HISTORY

4.1 Aerial Photographs

A review of aerial photographs taken in 1947 to 1994 was carried out. The following is a summary of the observations made from the review;

Year	Reference	Description
1947	55-65, Run 23, Liverpool, Jan 1947	<p>The site appeared to have been part of a larger parcel of land with no distinct boundaries. Jardine Drive was not formed. The subject site and surrounding land were extensively cleared of trees and bushes and there were no distinct land use.</p> <p>Surrounding areas were used for large scale agricultural activities and possibly grazing.</p>
1970	NSW 1908 5139, Run 21, 7/7/1970	<p>The residential dwelling (Site Feature G) was constructed. A number of small regular shed like structures were erected in the existing garage and shed locations (ie Site Features J, K and L). A chicken coup was also constructed and this appeared smaller than the current (Site Feature O). The remainder of the site appeared undeveloped.</p> <p>There was an increase in agricultural activities on surrounding properties.</p>
1986	NSW 3527 19 Run 26w, 03/8/1986	<p>The subject site appeared similar to 1970. The small shed like structures noted in the 1970 photo were removed and the garage (ie Site Features J) and brick and metal shed (ie Site Feature L) were constructed. The dam (Site Feature I) was constructed and the aluminium shed and silos (Site features P and Q) were erected.</p> <p>There was no significant change in land use on surrounding properties since 1970.</p>
1994	NSW 4244 Run 12 04/10/1994	<p>The subject site appeared similar and the residential dwelling (ie Site Feature W) was not yet constructed. There was a general reduction in market garden activities on surrounding site.</p>

4.2 Historical Land Titles

Description of historical information on the previous owners of the site was obtained from NSW Land & Property Information (LPI). The information can often be linked to possible land uses and provides an indication of potential contamination on the site. The following is a summary of information of current and previous proprietors;

Title Reference	Dealing No	Registration Date	Registered Proprietors
Book 10483 No 54	45059	27/06/1966	Gustav Kroner, Liverpool Fitter & Helene Kroner, Wife
	N201260	30/03/1973	Geoffrey Raymond Larkham, Prestons Services Advisor & Elizabeth Lillie Larkham, Wife
	P732873	25/05/1976	Joseph Sant, Rooty Hill Poultry Farmer & Mary Sant, Wife
Folio 21/29317			Joseph Sant, Rooty Hill Poultry Farmer & Mary Sant, Wife

4.3 NSW EPA Records

A search of NSW EPA contaminated land register and licensing register indicates the site to have no records kept under the Contaminated Land Management Act 1997 and Environmentally Hazardous Chemical Act 1985.

Refer to Appendix B for details of the NSW EPA search.

4.4 Section 149 (2) Zoning Certificate

A copy of the Section 149 (2) zoning certificate was obtained from Liverpool City Council to determine conditions applicable to the site in relation to the Contaminated Land Management Act. Reference may be made to the certificates attached in Appendix C.

The certificates indicated no matters arising to the Contaminated Land Management Amendment Act 2009 (NSW).

5. POTENTIAL FOR CONTAMINATION

5.1 On-site Source

Agricultural and Market Garden Landuse

The historical record based on aerial photographs and land title documents indicate no identifiable evidence of land cultivation or market garden activities since 1947. Poultry farming was noted on the site in the 1970's.

Common chemicals that are used in agricultural activities are Organochlorine Pesticides (OCP) and Organophosphorus Pesticides (OPP). OCP is the most persistent of these chemicals, with residues lasting in the environment up to 20 years, whilst OPP, herbicides and fungicides are less persistent in the environment and therefore not considered significant. Fertilisers used in market gardens can also contain heavy metals which are more persistent in the environment.

As land cultivation and market garden activities did not appear to have occurred within the site since at least the late 1940s, the risk of contamination from previous land cultivation activities is considered low.

Buried and Rubbish Fill

Fill up to 1.8m thick was encountered on the front portion of the site particularly in the vicinity of the dam (eg TP 18, 19, 27, 28, 29 and 31). Some minor inclusion of building rubbish (eg concrete and bricks) were encountered in two test pits (ie TP 29 and TP 31) and some minor fill typically less than 0.5m thick was also encountered in a number of test pits (eg TP 4, 5, 7, 8, 12, 22, 23 and 24) at the rear of the property.

As the fill in TP 29 and TP 31 was found to contain some building rubbish, there is the risk of more foreign material to be present in other locations within the site. In addition, as the source of fill is unknown there is also a potential presence of contaminants such as Heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), Organochlorine Pesticides (OCP), Polychlorinated Biphenyls (PCB), Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethyl Benzene and Xylene (BTEX), Polycyclic Aromatic Hydrocarbon (PAH) and Asbestos.

Existing Sheds and Garage

There are a number of sheds (ie Site Features D, H, L and P) and garage/car port (Site Features J and K) structures within the site and some of these structures may have been associated with maintenance and parking of machinery and vehicles and storage of chemicals (eg mechanical fluid and agricultural chemicals). In the car port (Site Feature K), there was a Bobcat parked inside and some oil staining was noted in the immediate vicinity of the Bobcat.

Contamination may also be derived from leakage of stored chemicals and accidental spillage of chemicals and mechanical fluid. Common contaminants may include Heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), Organochlorine Pesticides (OCP), Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethyl Benzene and Xylene (BTEX) and Polycyclic Aromatic Hydrocarbon (PAH).

Based on our site inspection, we are of the opinion that the risk of contamination from the above contaminating pathways is generally considered low and if exist, it is likely to be localised and limited to the upper subsurface profiles. The oil staining noted in the parked Bobcat (Site Feature K) was found to be confined to an area not larger than 1.5m diameter.

5.2 Off Site Sources

The adjoining surrounding properties to the north and east consist of vacant semi-rural land with no specific landuse. These properties would have been used for agricultural activities in the past, however as agricultural activities have ceased on these properties for a number of years, residue pesticides is likely to be present at low or negligible levels.

On this basis, the risk of off site migration of contaminants into the subject site from runoff from the adjoining neighbouring properties is considered low

6. FIELDWORK

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. The majority of the test pits were excavated using a rubber tyred backhoe and the test pit locations are shown on Drawing No 2.

The test pits were excavated to depths varying from 0.35m to 3.0m 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.

Disturbed soil samples were taken from the site to our laboratory for analysis. A dam water sample (DW) was taken from the dam (Site Feature I) for laboratory analysis and one silt sample (Silt) was taken from the base of the dam for laboratory analysis

Environmental soil samples were collected in duplicate from surface and at lower depths. GeoEnviro Consultancy's standard procedures were used for sampling and more information on the procedures adopted is provided in Appendix A.

The majority of the samples were composited in groups of three samples for laboratory analysis. Care was taken to ensure that the samples used in the composite were similar in geology and origin. A composite schedule is presented in Table 2. Individual samples were also taken for laboratory analysis.

7. LABORATORY ANALYSIS

Selected soil and water samples were analysed for contaminants of concern consisting of;

- 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

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.

The dam water sample was analysed for the above contaminants and also included nutrients (Nitrogen and Phosphorus) and other indicator parameters. The laboratory results are summarised in Table 10 to 13.

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.

8. SUBSURFACE CONDITIONS

Reference should be made to the attached Table 1 for a summary of subsurface profiles encountered. The following is a summary of the subsurface profiles encountered in the test pits;

Fill

Fill up to 1.8m thick and consisting mainly of Silty Clay and Clayey Silt (ie topsoil properties) was encountered on the front portion of the site particularly in the vicinity of the dam (eg TP 18, 19, 26, 27, 28, 29 and 31). Some minor inclusion of building rubbish (eg concrete and bricks) were encountered in TP 29, 30 and 31. Some minor oil stains was encountered on the fill in TP 26 which was taken from within the shed.

Some minor fill typically less than 0.5m thick was also encountered in TP 4, 5, 7, 12, 22, 23 and 24 at the rear of the property and this fill consists mainly of Silty Clay with some gravel. Some bricks fragments were encountered in TP 4. Crushed rock and gravel was encountered on the upper 400mm in TP 22 and 23.

Test Pit No 8 which was excavated on a small earth mound (ie about 0.5m high) encountered some rubbish inclusion such as bricks, nets and polystyrenes.

The fill in the vicinity of the existing dam (eg TP 18 and 19) was found to be moist to wet and the fill elsewhere was generally found to be dry to moist.

Topsoil and Topsoil/fill

Topsoil and topsoil/fill was encountered on the surface in the majority of the test pits with thickness ranging from 0.2m to 0.6m.

The topsoil was found to consist predominantly of Clayey Silt of low liquid limit. Some concrete boulders were encountered in the topsoil in TP 20.

The topsoil in TP 14, 18, 24 and 30 was found to be wet. The topsoil in the other test pits was generally found to be dry to moist.

Natural Soil

Underlying the topsoil and fill, natural clay was encountered in all test pits consisting predominantly of medium to high plasticity Silty Clay and Gravelly Silty Clay. Some Shaley Clay and bands of shale were encountered in some test pits.

The natural clay moisture content was generally found to be dry (ie less than its plastic limit) and to be very stiff. Relatively weak and wet natural clay was encountered in TP 6, 7, 9, 10, 11, 19, 24 and 29.

Bedrock

Shale was encountered in TP 1, 6, 8, 13, 22 and 31 at depths ranging from 0.3m to 1.8m below existing ground surface. The shale was assessed to be low to medium strength.

Groundwater

All test pits were found to be dry during and shortly after completion of the site investigation. Some perched ground water may be expected in the area within close proximity to the existing dam (Site Feature I)

9. REGULATORY REQUIREMENTS AND CRITERIA

9.1 Legislation

Since 1997, the OEH 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 DEC 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 OEH, have been developed to further provide guidance to consent authorities on their responsibilities under SEPP55 and the Environmental Planning and Assessment Act 1979.

9.2 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, January 1992 (ANZECC/NHMRC Guidelines, Reference 3). 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 5) 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 7) 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 the most sensitive land use, that being HBIL A residential with garden/accessible soil has been adopted as the Site Criteria.

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 1994 guidelines for assessing Service Station Sites (Reference 8) were also in assessing hydrocarbon contamination.

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 TPH, 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 results of laboratory analysis for the composites have been compared with 'modified criteria' by dividing the Criteria with the number of sub-samples forming the composite. The relevant criteria are presented in the summary table of results (Table 3 to 8).

The results of laboratory analysis for the dam water have been compared with ANZECC 2000 guidelines for the protection of 95% of species (Reference 11). The relevant criteria are presented in the summary table of results (Tables 10 to 13).

10. LABORATORY RESULTS AND ASSESSMENT.

10.1 Laboratory Test Results – Soil Samples

Heavy Metals

A total of four composite samples (C1 to C4) and six individual samples (TP 1 [0.0-0.1m], TP 8 [0.0-0.1m], TP 19 [0.3-0.4m], TP 22 [0.0-0.1m], TP 26 [0.0-0.1m] and TP 29 [0.0-0.1m]) were analysed for a range of heavy metals consisting of As, Cd, Cr, Cu, Pb, Hg, Ni and Zn.

All concentrations of heavy metals in all composite samples were found to be within the modified EIL and modified HBILs A levels except composite sample C3 and C4 where slightly elevated concentrations of Zinc of 140mg/kg to 150mg/kg were encountered above the modified EIL criteria of 128mg/kg. .

The laboratory analyses of individual samples and subsamples forming composite C3 and C4 indicate all concentrations of heavy metals to be within the Site Criteria. A slightly elevated concentration of Zinc of 620mg/kg was encountered in TP 8 (0.0-0.1m), above the EIL criteria of 385mg/kg however as the concentration is less than 3 times the EIL criteria, such a concentration is not considered significant. The results are summarised in Table 3.

Organochlorine Pesticides (OCP)

A total of four composite samples (C1 to C4) and six individual samples (TP 1 [0.0-0.1m], TP 8 [0.0-0.1m], TP 19 [0.3-0.4m], TP 22 [0.0-0.1m], TP 26 [0.0-0.1m] and TP 29 [0.0-0.1m]) were analysed for a range of organochlorine pesticides. All concentrations of OCP were found to have concentrations below detection limits and therefore within the Site Criteria. The results are summarised in Table 4.

Polychlorinated Biphenyls (PCB)

A total of four composite samples (C1 to C4) and six individual samples (TP 1 [0.0-0.1m], TP 8 [0.0-0.1m], TP 19 [0.3-0.4m], TP 22 [0.0-0.1m], TP 26 [0.0-0.1m] and TP 29 [0.0-0.1m]) were analysed for a range of Polychlorinated Biphenyls

All concentrations of PCB were found to be below the detection limits or insignificant and therefore within the Site Criteria. The results are summarised in Table 5.

Total Recoverable Hydrocarbons (TRH)

A total of six individual samples (TP 1 [0.0-0.1m], TP 8 [0.0-0.1m], TP 19 [0.3-0.4m], TP 22 [0.0-0.1m], TP 26 [0.0-0.1m] and TP 29 [0.0-0.1m]) were analysed for TRH.

The laboratory test results confirmed sample TP 26 (0.0-0.1m) to have unacceptable concentrations of TRH with concentrations of the C₁₀-C₃₆ chain of 50300mg/kg above the acceptable guidelines of 1000mg/kg and the F2 (>C₁₀-C₁₆) of 12000mg/kg above the Site Criteria of 280mg/kg.

All concentrations of TRH in the remaining samples were found to be below the detection limits or with negligible concentrations 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 six individual samples (TP 1 [0.0-0.1m], TP 8 [0.0-0.1m], TP 19 [0.3-0.4m], TP 22 [0.0-0.1m], TP 26 [0.0-0.1m] and TP 29 [0.0-0.1m]) were analysed for BTEX and Naphthalene. All samples analysed were found to have concentrations of BTEX and Naphthalene below laboratory detection limits and therefore within the Site Criteria. The results are summarised in Table 6.

Polycyclic Aromatic Hydrocarbons (PAH)

A total of six individual samples (TP 1 [0.0-0.1m], TP 8 [0.0-0.1m], TP 19 [0.3-0.4m], TP 22 [0.0-0.1m], TP 26 [0.0-0.1m] and TP 29 [0.0-0.1m]) were analysed for PAH.

Some PAH was encountered in TP 22 [0.0-0.1m] and TP 26 [0.0-0.1m] with a total concentration of 0.25mg/kg and 180mg/kg, however such a concentration was well within the Site Criteria of 300mg/kg. PAHs were not detected in any other sample. All samples analysed were found to be within the Site Criteria. The results are summarised in Table 7.

Asbestos

A total of six individual samples (TP 1 [0.0-0.1m], TP 8 [0.0-0.1m], TP 19 [0.3-0.4m], TP 22 [0.0-0.1m], TP 26 [0.0-0.1m] and TP 29 [0.0-0.1m]) were analysed for the presence of Asbestos. All soil samples analysed did not detect respirable asbestos fibres. The results are summarised Table 8.

10.2 Laboratory Test Results – Dam Silt

Heavy Metals

One silt sample (Silt) was analysed for a range of heavy metals consisting of Cu, Pb, Zn, Cd, Cr, Ni, As and Hg. The sample encountered low concentrations of heavy metals within the Site Criteria. The results are summarised in Table 3.

Organochlorine Pesticides

One silt sample (Silt) was analyzed for a range of organochlorine pesticides. The concentrations of OCP were found to be below the detection limit or have negligible concentrations and therefore within the Site Criteria. The results are summarised in Table 4.

Polychlorinated Biphenyls

One silt sample (Silt) was analysed for a range of PCB. All concentrations of PCB were found to be below the detection limit and therefore within the Site Criteria. The results are summarised in Table 5.

Total Recoverable Hydrocarbons

One silt sample (Silt) was analysed for TRH. The silt sample was found to have concentrations TRH below laboratory detection limits and therefore within the Site Criteria. The results are summarised in Table 6.

Benzene, Toluene, Ethyl Benzene and Xylene

One silt sample (Silt) was analysed for BTEX and the concentrations of BTEX were found to be below laboratory detection limits and therefore within the Site Criteria. The results are summarised in Table 6.

Polycyclic Aromatic Hydrocarbons

One silt sample (Silt) was analysed for PAH. The PAH concentrations in the Silt were found to be below laboratory detection limits and are therefore within the Site Criteria. The results are summarised in Table 7.

Asbestos

One silt sample (Silt) was tested for Asbestos. The sample did not encounter bonded asbestos or asbestos fibre. The results are summarised in Table 8.

10.3 Laboratory Test Results – Dam Water

Heavy Metals

The laboratory test results indicate the concentrations of Arsenic, Cadmium, Chromium, Copper, Lead, Mercury and Nickel in the dam water sample (DW) to be within the ANZECC guidelines for 95% protection of species (Ecosystem).

The concentration of Cadmium of 0.4 ug/L was found to be above the ANZECC guidelines for 95% protection of species (Ecosystem) of 0.2 ug/L.

Refer to Table 10 for details of the laboratory test results.

Pesticides and Chlorinated Products

The laboratory test results indicate all concentrations of Organochlorine pesticides, Organophosphorus pesticides and Polychlorinated Biphenyls to be below laboratory detection limits and therefore within the ANZECC guidelines.

Refer to Table 11 for details of the laboratory test results.

Hydrocarbons

The laboratory test results indicate all concentrations of TRH, BTEX and PAH in the dam water (DW) to be below laboratory detection limit. Refer to Table 12 for details of the laboratory test results.

Indicator Parameters

The dam water was found to have low salinity (ie Electrical Conductivity) and TDS with low nutrients (eg Nitrogen and phosphorus). Refer to Table 13 for details of the laboratory test results.

10.4 Quality Assurance/ Quality Control (QA/QC)

Chain of Custody Forms and Preservations

The fieldwork was carried out in accordance with standard written procedures which included collection of samples in new glass jars, preservation of samples in ice chests and transportation of samples to the contract laboratory under chain of custody documentation. Refer to Appendix D.

Field Duplicates

The fieldwork for this investigation was carried out in accordance with GeoEnviro Consultancy 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. The following duplicate samples were prepared and analysed;

Primary Sample	Duplicate Sample
TP 1 (0.0-0.1m)	Duplicate A

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.

For heavy metals, a maximum RPD value of 10.5% was calculated for Copper. The RPD values for OCP, PCB, TRH, BTEX and PAH could not be calculated because the results were below laboratory detection limits. Refer to Table 9 for details

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 overall 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 C

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.

11. ASSESSMENT AND RECOMMENDATIONS

This preliminary contamination assessment of the property referred to as Lot 21 DP 29317, No 150 Jardine Drive Edmondson Park was performed by GeoEnviro Consultancy in order to investigate the likelihood of ground contamination on the site. The investigation consisted of a review of site history, a site inspection and soil sampling and analysis program.

The site appeared to have predominantly consisted of cleared land in the 1940's and the poultry activities appeared to have occurred within the site since the 1970's.

The test pit investigation indicates the front portion of the site in the vicinity of the dam to have a significant amount of fill up to about 1.8m thick and some minor inclusion of building rubbish (eg concrete and bricks) were encountered in TP 29, 30 and 31. Some minor fill typically less than 0.5m was encountered at the rear of the site (ie TP 4, 5, 7, 12, 22, 23 and 24) with minor brick inclusion encountered in TP 4. Test Pit No 8 which was excavated on a small earth mound (ie about 0.5m high) encountered some rubbish inclusion such as bricks, nets and polystyrenes

Sampling was carried out at thirty one locations (TP 1 to 31). 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 (ie HBIL's A) except sample TP 26 (0.0-0.1m) where an unacceptable concentration of TRH was encountered. The TRH encountered was derived from leakage of mechanical oil from the parked Bobcat and appeared to be confined to an area less than 1.5m².

Within the context of the scope of work carried out, we are of the opinion that the risk of gross ground contamination within the site is generally considered low and can be made suitable for the proposed school facilities subject to the following;

- The hydrocarbon impacted soil encountered in the shed area (ie TP 26- Site Feature K) where the Bobcat was parked should be excavated and disposed off site to an NSW EPA approved landfill.

The extent of the TRH impacted soil is expected to be limited to an area of about 1.5m² and is likely to be confined to the upper 150mm of the subsurface profiles.

Validation sampling and laboratory analysis should be carried out after site remediation works to ensure the areas are adequately remediated. All fill material requiring off site disposal should be laboratory tested and characterised in accordance with NSW EPA guidelines (Reference 10).

- The front portion of the site in the vicinity of the dam was found to have a significant amount of fill up to about 1.8m thick and some minor inclusion of building rubbish (eg concrete and bricks) and some minor fill typically less than 0.5m was encountered at the rear of the site. The small mound (ie less than 0.5m high) at the rear of the site (TP 8) encountered some rubbish inclusion such as bricks, nets and polystyrenes. Though bonded asbestos were not encountered in our test pits, it may still exist as asbestos is a common building material used in the past.

These areas should be remediated by excavation of all fill containing building rubbish and disposal off site to a landfill. All rubbish fill to be disposed off site to a landfill should be laboratory tested and characterised in accordance with NSW EPA 2013 guideline “Part 1 – Classifying Waste”.

In addition to the above, the following issues relating to site contamination which need to be addressed prior to development of the site are as follows;

- All site remediation and validation works should be carried out under the supervision of an environmental consultant and this should include soil sampling and validation sampling to ensure these areas are adequately remediated.
- All other surface rubbish material not mentioned above and asbestos material where encountered on site should be appropriately disposed off site to an OEH approved landfill.

- Though buried rubbish fill cells were not encountered in other test pit locations, 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 OEH 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 Asbestos 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.
- Our investigation did not encounter buried asbestos pipes and it is common for these pipes to have been used in the past for effluent pumping in the piggery. Further investigation should be carried out after building demolition and site clearing to assess the presence of buried asbestos pipes. All asbestos pipes where encountered should be removed from the site.
- All fill material requiring off site disposal should be laboratory tested and characterised in accordance with NSW EPA guidelines (Reference 10).
- Validation sampling must also be carried out beneath the previous structures after demolition and removal has occurred to ensure contamination is not present beneath the existing structures. Should contamination be present, remediation and validation will be required to ensure the site is made suitable for the proposed subdivision development.
- The laboratory test results indicate the dam water sample (DW) to generally have low concentrations of contaminants of concern and nutrients, therefore dam dewatering may involve pumping and discharging the dam water in downstream receiving waters or on-site irrigation.

12. LIMITATIONS

The findings contained in this report are the results of discreet/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 subject site.

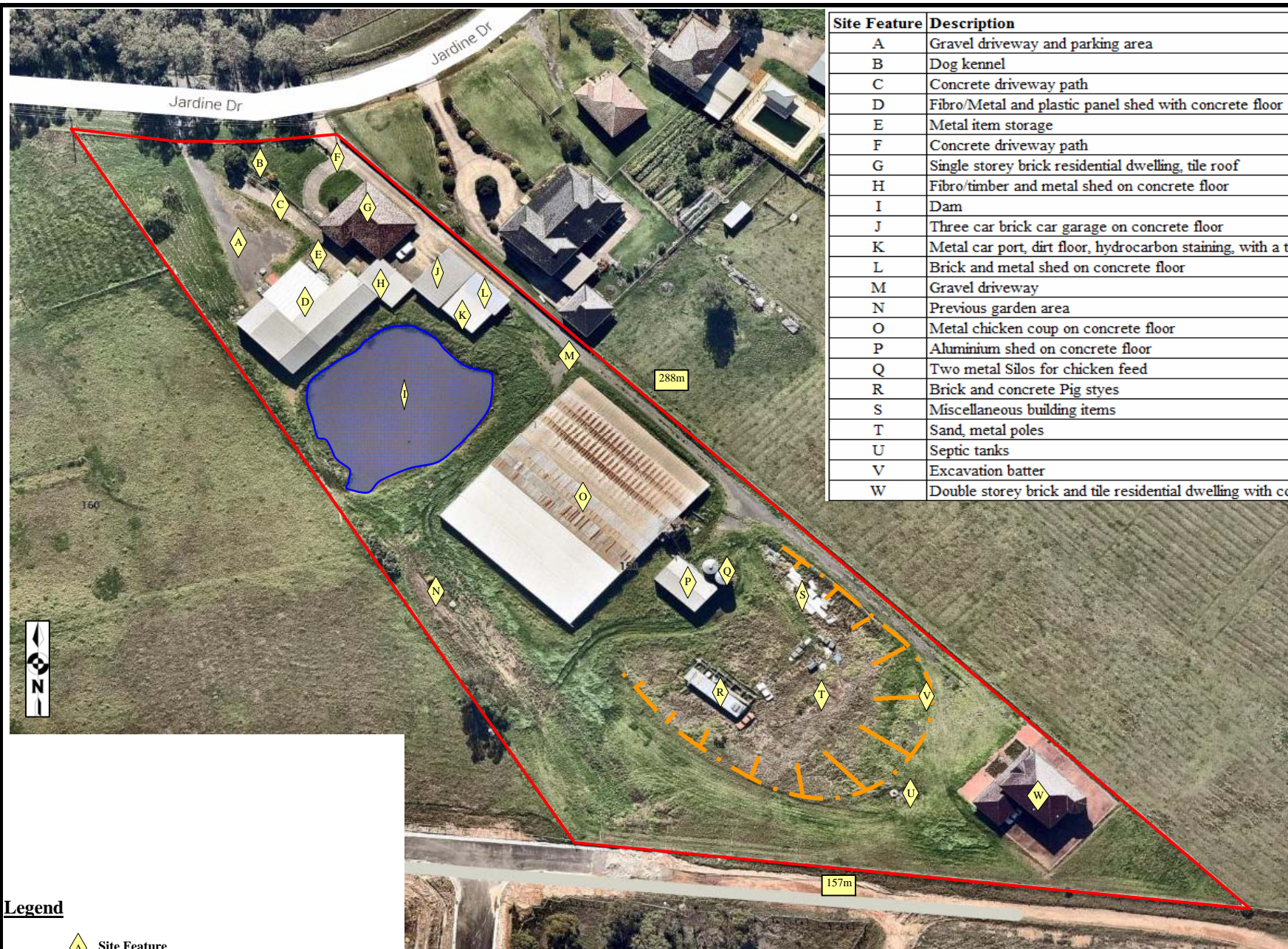
As regulatory evaluation criteria are constantly updated, concentrations of contaminants presently considered low, may in the future fall short of regulatory standards that require further investigation/redemption.

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 E 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.

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2/07/2015 12:39 PM

REFERENCES

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2. *1:100,000 Soil Landscape Map of Penrith – Soil Conservation Service of NSW ; Sheet 9029-9129*
3. *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.*
4. *Assessment of Orchard and Market Garden Contamination - Contaminated Sites Discussion Paper, NSW EPA 1995.*
5. *Health Based Soil Investigation Levels, National Environmental Health Forum Monographs Soil series No. 1 – 1996*
6. *Assessment of Site Contamination- Measure 1999 – National Environment Protection*
7. *National Environment Protection (Assessment of Site Contamination) Measure 1999(including updated Schedule B1 – 2015*
8. *Guidelines for Assessment Service Station Sites – NSW EPA 1994*
9. *Guidelines for the NSW Auditor Scheme(2nd Edition), NSW EPA 2004*
10. *NSW EPA 2014 guidelines “Part 1 – Classifying Waste*
11. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 – ANZECC.*



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

 Site Feature



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Drawn By: SG Date: 01/07/2015

Checked By: SL Date: 01/07/2015

Revision By: Date:

Scale: Proportional

A3

Jenga Star Investments Pty Ltd
No 150 Jardine Drive, Edmondson Park
Site Locality and Site Features Plan

Project No: JC15236A

Drawing No: 1



Legend



GeoEnviro Consultancy

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Checked By: SL	Date: 01/07/2015
Revision By:	Date:

Scale: Proportional

A3

Jenga Star Investments Pty Ltd
No 150 Jardine Drive, Edmondson Park
Test Pit Location Plan

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	(CI) Gravelly Silty Clay, medium plasticity, brown grey, with tree root, moist
	0.8-1.0	Natural	(CI) 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	(CI) Silty Clay, medium plasticity, grey, with trace gravel, dry to moist
	2.7-3.0	Natural	(CI) 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	(CI) 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	(CI) Silty Clay, medium plasticity, brown, moist to wet
	0.4-0.6	Natural	(CI) 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	(CI) Silty Clay, medium plasticity, brown, moist to wet
	0.15-0.35	Natural	(CI) Silty Clay, medium plasticity, grey, moist
10	0-0.2	Natural	(CI) Silty Clay, medium plasticity, brown, wet
	0.2-0.4	Natural	(CI) Silty Clay, medium plasticity, grey, moist to wet

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit



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

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit



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

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit



TABLE 1 (Page 3 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
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



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	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	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	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	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	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	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

ABC³	8	NA	15	29	22	NA	12	115
ACL⁴	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



TABLE 3

Summary of Analytical Results - Heavy Metals

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

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



TABLE 4
Summary of Analytical Results - OCP

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

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



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	Napthalene
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	<u>12000</u>	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)							50	280			0.7	480	480	110		5
0m to <1m							90				1			310		
1m to <2m							150				2					
2m to <4m							290				3					
4m+																
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 C₆-C₁₀ minus the sum of the BTEX concentrations
- 5) F2 is >C₁₀-C₁₆ 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



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
<i>HBILs 'A' Criteria</i>		<i>0.01% / 0.001%¹</i>

Note: ND = Not detected

Measured in %w/w

1) Bonded Asbestos Contaminant Material / Fibrous Asbestos and Asbestos Fines

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



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Consultancy**

TABLE 8

Summary of Analytical Results - Asbestos

Jenga Star Investments Pty Ltd

Proposed School Facilities

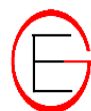
No 150 Jardine Drive, Edmondson Park

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



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	Fenitrothion	Malathion	Chlorpyrifos	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



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

APPENDIX A

Sampling Quality Assurance Plan

SAMPLING LOCATION AND RECORDING

The position of all sampling points shall be approximated with reference to site features and boundaries and recorded on a site plan. All sampling locations shall be labelled with a unique number with prefix as follows;

- BH - Boreholes including hand auger boreholes
- TP – Test pit excavation

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.

SOIL SAMPLING

Sampling equipment used shall be in sound working order and free of oil leaks. Soil samples recovered from the testpits were collected directly from an undisturbed lump of soil from the backhoe bucket. Care was taken to ensure that cross contamination between samples do not occur

Immediately after collection, samples were placed in new jars and stored in cooled conditions while in the field and in transit to the laboratory.

Field personnel will be responsible for the labelling of all sample containers. Labelling shall be completed using permanent markers. Each sample shall be labelled with the following information;

- Project Number
- Sample Identification Number.
- Sampling depth.

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.

APPENDIX B

NSW EPA and Groundwater Bore hole Searches

[home](#) · [help](#) · [login](#)
[customise](#)

All Groundwater

[find a site](#)

[All Groundwater Map](#)

bandwidth ☒ high ☐ low
[glossary and metadata](#)

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All Groundwater

All Groundwater Map

All data times are Eastern Standard Time

Map

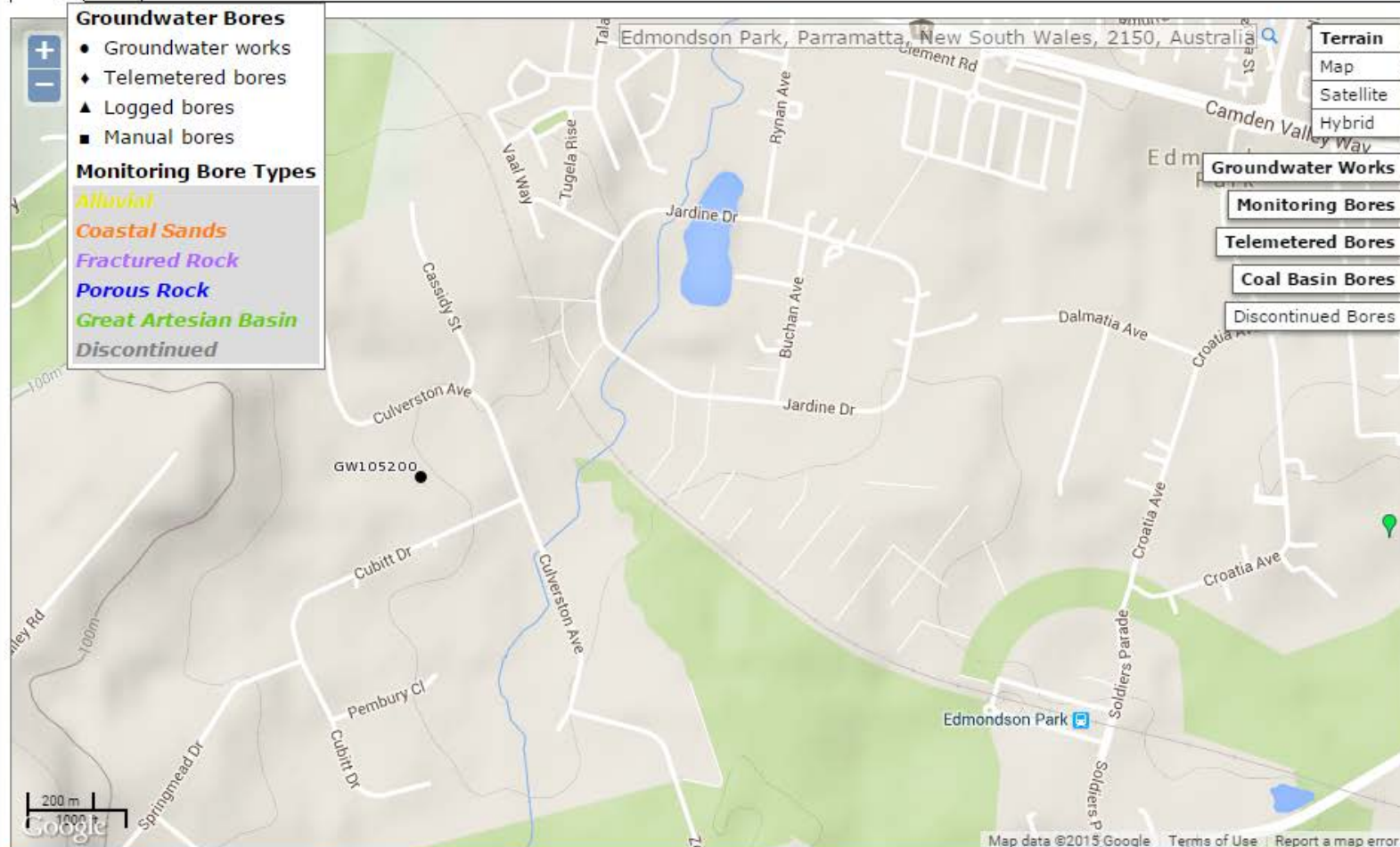
Info

Groundwater Bores

- Groundwater works
- ◆ Telemetered bores
- ▲ Logged bores
- Manual bores

Monitoring Bore Types

Alluvial
Coastal Sands
Fractured Rock
Porous Rock
Great Artesian Basin
Discontinued



Terrain
Map
Satellite
Hybrid

Groundwater Works

Monitoring Bores

Telemetered Bores

Coal Basin Bores

Discontinued Bores

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](#).

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](#).

Search TIP

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

... [more search tips](#)

Contaminated land

+ Management of contaminated
land+ Consultants and site auditor
scheme+ Underground petroleum storage
systemsGuidelines under the CLM Act
NEPM amendment

+ Further guidance

- Record of notices

About the record

Search the record

Search tips

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List of NSW contaminated sites
notified to EPA

Frequently asked questions

Forms

+ Other contamination issues

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Search results

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

did not find any records in our database.

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- 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](#).[Search Again](#)[Refine Search](#)

Search TIP

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

... [more search tips](#)

APPENDIX C

Section 149(2) Certificate

PLANNING CERTIFICATE UNDER SECTION 149
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Ref.: POST
Ppty: 13612

Cert. No.: 7491
Page No.: 1

Applicant:
GEOENVIRO PTY LTD
UNIT 5, 39-41 FOURTH AVE
BLACKTOWN NSW 2148

Receipt No.: 3061889
Receipt Amt.: 53.00
Date: 24-Jun-2015

Property Desc: 150 JARDINE DRIVE, EDMONDSON PARK NSW 2174
LOT 21 DP 29317

PART A
PRESCRIBED INFORMATION PROVIDED PURSUANT
TO SECTION 149(2) OF THE ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT 1979

NOTE: The following information is provided pursuant to Section 149(2) of the Environmental Planning and Assessment Act (EP&A Act) 1979 as prescribed by Schedule 4 of the Environmental Planning and Assessment Regulation (EP&A Regulation) 2000 and is applicable to the subject land as of the date of this certificate.

The Environmental Planning and Assessment Amendment Act 1997 commenced operation on the 1 July 1998. As a consequence of this Act the information contained in this certificate needs to be read in conjunction with the provisions of the Environmental Planning and Assessment (Amendment) Regulation 1998, Environmental Planning and Assessment (Further Amendment) Regulation 1998 and Environmental Planning and Assessment (Savings and Transitional) Regulation, 1998.

(1) Names of relevant planning instruments and DCPs

- (1) The name of each environment planning instrument that applies to the carrying out of Development on the land is/are listed below: -

Local Environmental Plans (LEPs)
Liverpool Local Environmental Plan 2008

State Environmental Planning Policies (SEPPs)
State Environmental Planning Policy No. 1 – Development Standards
State Environmental Planning Policy No. 19 – Bushland in Urban Areas
State Environmental Planning Policy No. 21 – Caravan Parks
State Environmental Planning Policy No. 30 – Intensive Agriculture
State Environmental Planning Policy No. 32 – Urban Consolidation (Redevelopment of Urban Land)
State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
State Environmental Planning Policy No. 44 – Koala Habitat
State Environmental Planning Policy No. 50 – Canal Estate Development
State Environmental Planning Policy No. 55 – Remediation of Land
State Environmental Planning Policy – (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy No. 62 – Sustainable Aquaculture
State Environmental Planning Policy No. 64 – Advertising and Signage
State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Development
State Environmental Planning Policy – (Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy – (Infrastructure) 2007
State Environmental Planning Policy – (Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy – (Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy – (Affordable Rental Housing) 2009
State Environmental Planning Policy (Sydney Regional Growth Centres) 2006
State Environmental Planning Policy – (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy – (State and Regional Development) 2011

Deemed State Environmental Planning Policies (Deemed SEPPs)
Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment
This plan aims to preserve and protect and to encourage the restoration or rehabilitation of regionally significant sensitive natural environments, to preserve, enhance and protect the freshwater and estuarine ecosystems within the Catchment and to ensure that development achieves the environmental objectives for the Catchment.

- (2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved).

Draft Local Environmental Plans (LEPs)
Not Applicable

Draft State Environmental Planning Policies (SEPPs)
Draft State Environmental Planning Policy (Competition) 2010

- (3) The name of each development control plan that applies to the carrying out of development

on the land.

Liverpool Development Control Plan 2008 (as amended).

- (4) In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument.

2. **ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS**

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described):

Liverpool Local Environmental Plan 2008

- (a) Identity of the zone

R1 General Residential

- (b) The purpose for which the instrument provides that development may be carried out within the zone without the need for development consent

Home-based child care; Home occupations

- (c) The purposes for which the instrument provides that development may not be carried out within the zone except with development consent.

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Child care centres; Community facilities; Dwelling houses; Educational establishments; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Home businesses; Home industries; Hostels; Multi dwelling housing; Neighbourhood shops; Places of public worship; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Residential flat buildings; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Serviced apartments; Shop top housing

- (d) The purposes for which the instrument provides that development is prohibited within the zone

Any development not specified in item (b) or (c).

- (a) The Identity of the zone

SP2 Infrastructure – Educational Establishments

- (b) The purposes for which the instrument provides that development may be carried out within the zone without the need for development consent.

Nil

- (c) The purposes for which the instrument provides that development may not be carried out within the zone except with development consent.

The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose; Environmental protection works; Roads

- (d) The purposes for which the instrument provides that development is prohibited within the zone
Any other development not specified in item (b) or (c)
- (e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed,
The land's dimensions (when considered in isolation) are not such as to prohibit the erection of a dwelling house on the land. However, a dwelling house is prohibited within a zone(s) that applies to the land.
- (f) whether the land includes or comprises critical habitat
The land does not include or comprise critical habitat.
- (g) whether the land is in a conservation area (however described)
Land is not located in a Conservation Area.
- (h) whether an item of environmental heritage (however described) is situated on the land
No item of Environmental Heritage is situated on the land.

Note: Schedule 1 of the Liverpool Local Environmental Plan 2008 permits certain development which would otherwise be prohibited within a zone. In addition, Clause 7.18 of the Liverpool Local Environmental Plan 2008 may prohibit certain development due to potential for exposure to aircraft noise, despite the zone. Any additional information which may affect the permissibility of development on the land is provided below;

Additional Uses

Use of certain land at Edmondson Park in Zones R1, R3 and B2

- (1) This clause applies to land in Zones R1 General Residential, R3 Medium Density Residential and B2 Local Centre at Edmondson Park.
- (2) In Zone R1 General Residential, development for the purpose of residential accommodation (other than dual occupancy) is permitted with consent.
- (3) In Zone R3 Medium Density Residential, development for the purpose of food and drink premises is permitted with consent.
- (4) In Zone B2 Local Centre, development for the purpose of residential flat buildings is permitted with consent.

2A. Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

Not Applicable

3. COMPLYING DEVELOPMENT

- (1) The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Complying development under the General Development Code may be carried out on this land.

Complying development under the Fire Safety Code may be carried out on this land.

Complying development under the Housing Alterations Code may be carried out on this land.

Complying Development under the Commercial and Industrial Alterations Code may be carried out on this land.

Complying Development under the Subdivisions Code may be carried out on this land.

Complying Development under the Demolition Code may be carried out on this land.

Complying development under the General Housing Code may be carried out on part of this land.

Complying development under the Rural Housing Code may be carried out on part of this land.

Complying Development under the Commercial and Industrial (New Buildings and Additions) Code may be carried out on part of this land.

- (2) The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.

Complying development may not be carried out on part of the land because of the following provisions;

Part of the land is excluded being land that is reserved for a public purpose in an environmental planning instrument.

- (3) If the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Not Applicable

4. Coastal Protection Act 1979

There has been no notification from the Department of Public Works that the land is subject to the operation of Section 38 or 39 of the Coastal Protection Act, 1979.

4A Certain information relating to beaches and coasts

- (1) In relation to a coastal council—whether an order has been made under Part 4D of the Coastal Protection Act 1979 in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with.

Not Applicable

- (2) In relation to a coastal council:

(a) whether the council has been notified under section 55X of the Coastal Protection

- (b) Act 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land), and if works have been so placed—whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

Not Applicable

- 4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works
In relation to a coastal council—whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

Not Applicable

5. Mine Subsidence
Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

The land is not a mine subsidence district.

6. Road Widening and Road Realignment
Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the Roads Act 1993, or
(b) any environmental planning instrument, or
(c) any resolution of the council.

The land is not affected by any road widening or road realignment.

7. Council and Other Public Authority Policies on Hazard Risk Restrictions
The policies applying to the land from Council and other Public Authorities regarding hazard risk restrictions is/are outlined below: -

- (a) Council Policy – Other Risks
Land Slip

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of land slip.

Bushfire

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate which restricts the development of the land because of the likelihood of bushfire.

Tidal Inundation

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of tidal inundation.

Subsidence

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of subsidence.

Acid Sulphate Soil

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of acid sulfate soil.

Other Risks

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of any other risk.

(b) Public Authority Policies

The land is not affected by a policy adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in the planning certificates issued by the Council, that restricts the development of the land because of the likelihood of land slip, bushfire, flooding, tidal inundation, subsidence, acid sulphate soils or any other risk.

7A. Flood Related Development Controls Information

Whether or not development on that land or part of the land for purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

- (1) Whether or not development on that land or part of the land for purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

Development on all of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings is not subject to flood related development controls.

- (2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

Development on all of the land for any other purpose is not subject to flood related development controls.

- (3) Words and expressions in this clause have the same meanings as in the

instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

8. **Land Reserved for Acquisition**
Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.

An environmental planning instrument or proposed environmental planning instrument applying to the land makes provision for all or part of the land to be acquired by a public authority.
9. **Contribution Plans**
The name of each contribution plan applying to the land is/are outlined below: -
Liverpool Contributions Plan 2009
- 9A **Biodiversity certified land**
If the land is biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995), a statement to that effect.

The land is biodiversity certified land within the meaning of Part 7AA of the Threatened Species Conservation Act (1995).
10. **Bio banking agreements**
If the land is land to which a bio banking agreement under Part 7A of the Threatened Species Conservation Act 1995 relates, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Director-General of the Department of Environment, Climate Change and Water).

The land is not land to which a biobanking agreement under part 7A of the *Threatened Species Conservation Act 1995* relates.
11. **Bushfire Prone Land**
None of the land is bush fire prone land as defined in the Environmental Planning and Assessment Act 1979.
12. **Property Vegetation Plans**
If the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The land is not land to which a property vegetation plan relates, as all land in the Liverpool Local Government Area is excluded from the operation of the Native Vegetation Act 2003.
13. **Orders under Trees (Disputes Between Neighbours) Act 2006**
Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

Council has not been notified of an order made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.
14. **Directions under Part 3A**
If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a

provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

No such direction applies to the land.

15. Site Compatibility Certificates and Conditions for Seniors Housing

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies:

(a) a statement of whether there is a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (i) the period for which the certificate is current, and
- (ii) that a copy may be obtained from the head office of the Department of Planning, and

Council is not aware of a current site compatibility certificate (seniors housing) on the land

(b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

There have been no such terms imposed as a condition of consent to development on the land.

16. Site Compatibility Certificates for Infrastructure

A statement of whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (a) the period for which the certificate is valid, and
- (b) that a copy may be obtained from the head office of the Department of Planning.

Council is not aware of a current site compatibility certificate (infrastructure) on the land.

17. Site compatibility certificates and conditions for affordable rental housing

(1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (a) the period for which the certificate is current, and
- (b) that a copy may be obtained from the head office of the Department of Planning.

Council is not aware of a current site compatibility certificate (affordable rental housing) on the land.

(2) A statement setting out any terms of a kind referred to in clause 17 (1) or 38 (1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

There have been no such terms imposed as a condition of consent to development on the land.

18. Paper subdivision information

- (1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
No such plan applies to the land.
- (2) The date of any subdivision order that applies to the land.
No subdivision order applies to the land
- (3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

19. Site verification certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

- (a) the matter certified by the certificate, and

Council is not aware of a current site verification certificate on the land.

Note. A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

- (b) the date on which the certificate ceases to be current (if any), and

Not Applicable

- (c) that a copy may be obtained from the head office of the Department of Planning and Infrastructure.

Not Applicable

Note. The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:

- (a) that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

Not Applicable

- (b) that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

- (c) that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,

Not Applicable

- (d) that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

- (e) that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

Not Applicable

Note. Section 26 of the Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009 provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

No such exemption or authorisation applies to the land.



Bruce Macnee
Manager – Strategic Planning
Liverpool City Council

For further information, please contact
CALL CENTRE – 1300 36 2170

APPENDIX D

Laboratory Certificates – Contamination and Salinity

CERTIFICATE OF ANALYSIS

129559

Client:

Geoenviro Consultancy Pty Ltd
PO Box 1543, Macquarie Centre
North Ryde
NSW 2113

Attention: Solern Liew

Sample log in details:

Your Reference:	JC15236A, Edmondson Park
No. of samples:	39 Soils, 1 Water
Date samples received / completed instructions received	15/06/2015 / 15/6/2015

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: / Issue Date:	23/06/15 / 23/06/15
Date of Preliminary Report:	Not Issued

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

Results Approved By:



Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	129559-17	129559-18	129559-19	129559-20	129559-21
Your Reference	-----	TP 1	TP 8	TP 19	TP 22	TP 26
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.0-0.1	0.3-0.4	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC 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
Surrogate aaa-Trifluorotoluene	%	68	67	71	79	74

vTRH(C6-C10)/BTEXN in Soil				
Our Reference:	UNITS	129559-22	129559-23	129559-24
Your Reference	-----	TP 29	Duplicate A	Silt
Composite Reference	-----	-	-	-
Depth		0.0-0.1	-	-
Date Sampled		11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015
TRHC ₆ - C ₉	mg/kg	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25
vTPHC 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
Surrogate aaa-Trifluorotoluene	%	89	70	91

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	129559-17	129559-18	129559-19	129559-20	129559-21
Your Reference	-----	TP 1	TP 8	TP 19	TP 22	TP 26
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.0-0.1	0.3-0.4	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	2,100
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	47,000
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	1,200
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	12,000
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	12,000
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	38,000
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	670
Surrogate o-Terphenyl	%	79	72	73	93	#

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	129559-22	129559-23	129559-24
Your Reference	-----	TP 29	Duplicate A	Silt
Composite Reference	-----	-	-	-
Depth		0.0-0.1	-	-
Date Sampled		11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100
TRHC 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
Surrogate o-Terphenyl	%	92	82	73

PAHs in Soil Our Reference: Your Reference Composite Reference Depth Date Sampled Type of sample	UNITS ----- -----	129559-17 TP 1 - 0.0-0.1 11/06/2015 Soil	129559-18 TP 8 - 0.0-0.1 11/06/2015 Soil	129559-19 TP 19 - 0.3-0.4 11/06/2015 Soil	129559-20 TP 22 - 0.0-0.1 11/06/2015 Soil	129559-21 TP 26 - 0.0-0.1 11/06/2015 Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.2
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	3.7
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	11
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1	15
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	12
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	7.3
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	130
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.4
Benzo(b,j,k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	[NA]
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	[NA]
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	[NA]
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	0.25	180
Surrogate p-Terphenyl-d14	%	90	82	84	91	81

PAHs in Soil				
Our Reference:	UNITS	129559-22	129559-23	129559-24
Your Reference	-----	TP 29	Duplicate A	Silt
Composite Reference	-----	-	-	-
Depth		0.0-0.1	-	-
Date Sampled		11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015
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
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
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	94	91	83

Organochlorine Pesticides in soil						
Our Reference:	UNITS	129559-13	129559-14	129559-15	129559-16	129559-17
Your Reference	-----	C1	C2	C3	C4	TP 1
Composite Reference	-----	1+2+3	4+5+6	7+8+9	10+11+12	-
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-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
beta-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
pp-DDD	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-DDT	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
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
Surrogate TCMX	%	91	106	95	100	95

Organochlorine Pesticides in soil						
Our Reference:	UNITS	129559-18	129559-19	129559-20	129559-21	129559-22
Your Reference	-----	TP 8	TP 19	TP 22	TP 26	TP 29
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.3-0.4	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-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
beta-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
pp-DDD	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-DDT	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
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
Surrogate TCMX	%	79	86	89	67	90

Organochlorine Pesticides in soil			
Our Reference:	UNITS	129559-23	129559-24
Your Reference	-----	Duplicate A	Silt
Composite Reference	-----	-	-
Depth		-	-
Date Sampled		11/06/2015	11/06/2015
Type of sample		Soil	Soil
Date extracted	-	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Surrogate TCMX	%	92	82

PCBs in Soil Our Reference: Your Reference Composite Reference Depth Date Sampled Type of sample	UNITS ----- -----	129559-13 C1 1+2+3 0.0-0.1 11/06/2015 Soil	129559-14 C2 4+5+6 0.0-0.1 11/06/2015 Soil	129559-15 C3 7+8+9 0.0-0.1 11/06/2015 Soil	129559-16 C4 10+11+12 0.0-0.1 11/06/2015 Soil	129559-17 TP 1 - 0.0-0.1 11/06/2015 Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
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
Surrogate TCLMX	%	91	106	95	100	95

PCBs in Soil Our Reference: Your Reference Composite Reference Depth Date Sampled Type of sample	UNITS ----- -----	129559-18 TP 8 - 0.0-0.1 11/06/2015 Soil	129559-19 TP 19 - 0.3-0.4 11/06/2015 Soil	129559-20 TP 22 - 0.0-0.1 11/06/2015 Soil	129559-21 TP 26 - 0.0-0.1 11/06/2015 Soil	129559-22 TP 29 - 0.0-0.1 11/06/2015 Soil
Date extracted	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
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
Surrogate TCLMX	%	79	86	89	67	90

PCBs in Soil			
Our Reference:	UNITS	129559-23	129559-24
Your Reference	-----	Duplicate A	Silt
Composite Reference	-----	-	-
Depth		-	-
Date Sampled		11/06/2015	11/06/2015
Type of sample		Soil	Soil
Date extracted	-	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	92	82

Acid Extractable metals in soil						
Our Reference:	UNITS	129559-13	129559-14	129559-15	129559-16	129559-17
Your Reference	-----	C1	C2	C3	C4	TP 1
Composite Reference	-----	1+2+3	4+5+6	7+8+9	10+11+12	-
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Arsenic	mg/kg	7	9	9	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	13	16	14	13
Copper	mg/kg	19	30	32	38	9
Lead	mg/kg	23	18	23	24	20
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	9	13	15	5
Zinc	mg/kg	57	110	150	140	31

Acid Extractable metals in soil						
Our Reference:	UNITS	129559-18	129559-19	129559-20	129559-21	129559-22
Your Reference	-----	TP 8	TP 19	TP 22	TP 26	TP 29
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.3-0.4	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Arsenic	mg/kg	6	7	<4	<4	13
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	0.4
Chromium	mg/kg	7	8	4	5	44
Copper	mg/kg	44	27	22	66	58
Lead	mg/kg	39	15	19	13	53
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	4	8	6	34
Zinc	mg/kg	620	35	47	77	260

Acid Extractable metals in soil			
Our Reference:	UNITS	129559-23	129559-24
Your Reference	-----	Duplicate A	Silt
Composite Reference	-----	-	-
Depth		-	-
Date Sampled		11/06/2015	11/06/2015
Type of sample		Soil	Soil
Date digested	-	18/06/2015	18/06/2015
Date analysed	-	18/06/2015	18/06/2015
Arsenic	mg/kg	6	9
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	14	16
Copper	mg/kg	10	25
Lead	mg/kg	19	18
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	5	9
Zinc	mg/kg	33	37

Moisture						
Our Reference:	UNITS	129559-13	129559-14	129559-15	129559-16	129559-17
Your Reference	-----	C1	C2	C3	C4	TP 1
Composite Reference	-----	1+2+3	4+5+6	7+8+9	10+11+12	-
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Moisture	%	17	34	19	25	17

Moisture						
Our Reference:	UNITS	129559-18	129559-19	129559-20	129559-21	129559-22
Your Reference	-----	TP 8	TP 19	TP 22	TP 26	TP 29
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.3-0.4	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/06/2015	17/06/2015	17/06/2015	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Moisture	%	16	16	8.2	2.7	11

Moisture			
Our Reference:	UNITS	129559-23	129559-24
Your Reference	-----	Duplicate A	Silt
Composite Reference	-----	-	-
Depth		-	-
Date Sampled		11/06/2015	11/06/2015
Type of sample		Soil	Soil
Date prepared	-	17/06/2015	17/06/2015
Date analysed	-	18/06/2015	18/06/2015
Moisture	%	16	25

Asbestos ID - soils						
Our Reference:	UNITS	129559-17	129559-18	129559-19	129559-20	129559-21
Your Reference	-----	TP 1	TP 8	TP 19	TP 22	TP 26
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.0-0.1	0.3-0.4	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	23/06/2015	23/06/2015	23/06/2015	23/06/2015	23/06/2015
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 35g	Approx. 35g	Approx. 40g
Sample Description	-	Brown coarse-grain soil & rocks	Brown coarse-grain soil & rocks	Brown coarse-grain soil & rocks	Brown coarse-grain soil & rocks	Brown coarse-grain 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:	UNITS	129559-22	129559-24
Your Reference	-----	TP 29	Silt
Composite Reference	-----	-	-
Depth		0.0-0.1	-
Date Sampled		11/06/2015	11/06/2015
Type of sample		Soil	Soil
Date analysed	-	23/06/2015	23/06/2015
Sample mass tested	g	Approx. 35g	Approx. 30g
Sample Description	-	Brown coarse-grain soil & rocks	Brown coarse-grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected

CEC						
Our Reference:	UNITS	129559-17	129559-26	129559-30	129559-35	129559-36
Your Reference	-----	TP 1	TP 3	TP 13	TP 22	TP 22
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015
Date analysed	-	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015
Exchangeable Ca	meq/100g	5.5	5.1	4.0	18	1.6
Exchangeable K	meq/100g	0.5	0.4	0.4	0.3	0.3
Exchangeable Mg	meq/100g	1.6	2.7	5.7	0.77	5.3
Exchangeable Na	meq/100g	<0.1	<0.1	0.14	<0.1	0.56
Cation Exchange Capacity	meq/100g	7.6	8.2	10	19	7.8
ESP	%	[NA]	[NA]	1	[NA]	7

Misc Inorg - Soil						
Our Reference:	UNITS	129559-17	129559-23	129559-25	129559-26	129559-27
Your Reference	-----	TP 1	Duplicate A	TP 1	TP 3	TP 3
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	-	0.5-0.6	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Date analysed	-	19/06/2015	19/06/2015	19/06/2015	19/06/2015	19/06/2015
pH 1:5 soil:water	pH Units	6.3	6.4	5.4	6.2	5.6
Electrical Conductivity 1:5 soil:water	µS/cm	56	53	50	55	100
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	29	41	[NA]	43
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	10	63	[NA]	92
Resistivity in soil*	ohm m	[NA]	[NA]	200	[NA]	100

Misc Inorg - Soil						
Our Reference:	UNITS	129559-28	129559-29	129559-30	129559-31	129559-32
Your Reference	-----	TP 3	TP 13	TP 13	TP 13	TP 17
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Date analysed	-	19/06/2015	19/06/2015	19/06/2015	19/06/2015	19/06/2015
pH 1:5 soil:water	pH Units	5.2	6.5	5.2	5.4	7.3
Electrical Conductivity 1:5 soil:water	µS/cm	370	77	63	150	140
Chloride, Cl 1:5 soil:water	mg/kg	390	[NA]	20	91	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	110	[NA]	57	99	[NA]
Resistivity in soil*	ohm m	[NA]	[NA]	160	[NA]	[NA]

Misc Inorg - Soil						
Our Reference:	UNITS	129559-33	129559-34	129559-35	129559-36	129559-37
Your Reference	-----	TP 17	TP 17	TP 22	TP 22	TP 22
Composite Reference	-----	-	-	-	-	-
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/06/2015	18/06/2015	18/06/2015	18/06/2015	18/06/2015
Date analysed	-	19/06/2015	19/06/2015	19/06/2015	19/06/2015	19/06/2015
pH 1:5 soil:water	pH Units	5.3	5.2	7.7	5.5	5.4
Electrical Conductivity 1:5 soil:water	µS/cm	140	180	90	240	240
Chloride, Cl 1:5 soil:water	mg/kg	10	89	[NA]	120	200
Sulphate, SO4 1:5 soil:water	mg/kg	200	97	[NA]	260	130
Resistivity in soil*	ohm m	[NA]	55	[NA]	41	[NA]

Misc Inorg - Soil			
Our Reference:	UNITS	129559-38	129559-39
Your Reference	-----	TP 31	TP 31
Composite Reference	-----	-	-
Depth		0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015
Type of sample		Soil	Soil
Date prepared	-	18/06/2015	18/06/2015
Date analysed	-	19/06/2015	19/06/2015
pH 1:5 soil:water	pH Units	5.8	5.7
Electrical Conductivity 1:5 soil:water	µS/cm	51	66
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	10
Sulphate, SO ₄ 1:5 soil:water	mg/kg	[NA]	65
Resistivity in soil*	ohm m	[NA]	150

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date extracted	-	18/06/2015
Date analysed	-	19/06/2015
TRHC ₆ - C ₉	µg/L	<10
TRHC ₆ - C ₁₀	µg/L	<10
TRHC ₆ - C ₁₀ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	107
Surrogate toluene-d8	%	94
Surrogate 4-BFB	%	88

svTRH (C10-C40) in Water		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date extracted	-	17/06/2015
Date analysed	-	17/06/2015
TRHC ₁₀ - C ₁₄	µg/L	<50
TRHC ₁₅ - C ₂₈	µg/L	<100
TRHC ₂₉ - C ₃₆	µg/L	<100
TRH>C ₁₀ - C ₁₆	µg/L	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50
TRH>C ₁₆ - C ₃₄	µg/L	<100
TRH>C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	92

PAHs in Water		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date extracted	-	17/06/2015
Date analysed	-	17/06/2015
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	92

OCP in water		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date extracted	-	17/06/2015
Date analysed	-	17/06/2015
HCB	µg/L	<0.2
alpha-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
beta-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	91

PCBs in Water		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date extracted	-	17/06/2015
Date analysed	-	17/06/2015
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCLMX	%	91

HM in water - dissolved		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date prepared	-	17/06/2015
Date analysed	-	17/06/2015
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	0.4
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	7
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	2
Zinc-Dissolved	µg/L	8

Metals in Waters - Total		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date prepared	-	17/06/2015
Date analysed	-	17/06/2015
Phosphorus - Total	mg/L	0.2

Miscellaneous Inorganics		
Our Reference:	UNITS	129559-40
Your Reference	-----	DW
Composite Reference	-----	-
Depth		-
Date Sampled		11/06/2015
Type of sample		Water
Date prepared	-	16/06/2015
Date analysed	-	16/06/2015
pH	pH Units	8.1
Electrical Conductivity	µS/cm	630
Chloride, Cl	mg/L	30
Sulphate, SO ₄	mg/L	25
Total Dissolved Solids (grav)	mg/L	460
Turbidity	NTU	52
TKN in water	mg/L	5.9
Total Nitrogen in water	mg/L	42

MethodID	Methodology Summary
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-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
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-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ 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. 'TEQ 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. 'TEQ 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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
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.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soil based on Rayment and Lyons 2011.
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-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity.

MethodID	Methodology Summary
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-5oC.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg.
Inorg-055/062	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen.

Client Reference: JC15236A, Edmondson Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	129559-17	17/06/2015 17/06/2015	LCS-9	17/06/2015
Date analysed	-			18/06/2015	129559-17	18/06/2015 18/06/2015	LCS-9	18/06/2015
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	129559-17	<25 <25	LCS-9	95%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	129559-17	<25 <25	LCS-9	95%
Benzene	mg/kg	0.2	Org-016	<0.2	129559-17	<0.2 <0.2	LCS-9	93%
Toluene	mg/kg	0.5	Org-016	<0.5	129559-17	<0.5 <0.5	LCS-9	99%
Ethylbenzene	mg/kg	1	Org-016	<1	129559-17	<1 <1	LCS-9	93%
m+p-xylene	mg/kg	2	Org-016	<2	129559-17	<2 <2	LCS-9	95%
o-Xylene	mg/kg	1	Org-016	<1	129559-17	<1 <1	LCS-9	90%
naphthalene	mg/kg	1	Org-014	<1	129559-17	<1 <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	84	129559-17	68 71 RPD: 4	LCS-9	91%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	[NT]	[NT]	LCS-9	17/06/2015
Date analysed	-			18/06/2015	[NT]	[NT]	LCS-9	17/06/2015
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-9	86%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-9	85%
TRHC ₂₈ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-9	85%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-9	86%
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-9	85%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-9	85%
Surrogate o-Terphenyl	%		Org-003	80	[NT]	[NT]	LCS-9	104%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	[NT]	[NT]	LCS-9	17/06/2015
Date analysed	-			18/06/2015	[NT]	[NT]	LCS-9	18/06/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-9	107%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-9	93%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-9	98%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-9	99%

Client Reference: JC15236A, Edmondson Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-9	103%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-9	96%
Benzo(b,j,k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-9	96%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	65	[NT]	[NT]	LCS-9	97%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	129559-17	17/06/2015 17/06/2015	LCS-9	17/06/2015
Date analysed	-			18/06/2015	129559-17	18/06/2015 18/06/2015	LCS-9	18/06/2015
HCB	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	102%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	88%
Heptachlor	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	79%
delta-BHC	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	108%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	94%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	105%
Dieldrin	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	100%
Endrin	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	91%
pp-DDD	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	99%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	LCS-9	94%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	94	129559-17	95 88 RPD: 8	LCS-9	100%

Client Reference: JC15236A, Edmondson Park

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	129559-17	17/06/2015 17/06/2015	LCS-9	17/06/2015
Date analysed	-			18/06/2015	129559-17	18/06/2015 18/06/2015	LCS-9	18/06/2015
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	129559-17	<0.1 <0.1	LCS-9	115%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	129559-17	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	94	129559-17	95 88 RPD: 8	LCS-9	87%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			18/06/2015	129559-17	18/06/2015 18/06/2015	LCS-2	18/06/2015
Date analysed	-			18/06/2015	129559-17	18/06/2015 18/06/2015	LCS-2	18/06/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	129559-17	6 7 RPD: 15	LCS-2	113%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	129559-17	<0.4 <0.4	LCS-2	102%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	129559-17	13 15 RPD: 14	LCS-2	107%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	129559-17	9 10 RPD: 11	LCS-2	104%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	129559-17	20 19 RPD: 5	LCS-2	103%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	129559-17	<0.1 <0.1	LCS-2	79%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	129559-17	5 5 RPD: 0	LCS-2	104%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	129559-17	31 32 RPD: 3	LCS-2	105%

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
CEC						Base II Duplicate II %RPD		
Date extracted	-			22/06/2015	[NT]	[NT]	LCS-1	22/06/2015
Date analysed	-			22/06/2015	[NT]	[NT]	LCS-1	22/06/2015
Exchangeable Ca	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	99%
Exchangeable K	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	109%
Exchangeable Mg	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	98%
Exchangeable Na	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	103%
Cation Exchange Capacity	meq/100 g	1	Metals-009	<1.0	[NT]	[NT]	[NR]	[NR]
ESP	%	1	Metals-009	<1	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Misc Inorg - Soil						Base II Duplicate II %RPD		
Date prepared	-			18/06/2015	129559-17	18/06/2015 18/06/2015	LCS-1	18/06/2015
Date analysed	-			19/06/2015	129559-17	19/06/2015 19/06/2015	LCS-1	19/06/2015
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	129559-17	6.3 6.3 RPD: 0	LCS-1	101%
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	129559-17	56 57 RPD: 2	LCS-1	100%
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	LCS-1	96%
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	LCS-1	101%
Resistivity in soil*	ohm m	1	Inorg-002	<1.0	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Water						Base II Duplicate II %RPD		
Date extracted	-			18/06/2015	[NT]	[NT]	LCS-W3	18/06/2015
Date analysed	-			19/06/2015	[NT]	[NT]	LCS-W3	19/06/2015
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	123%
TRHC ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	123%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	118%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	118%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	122%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W3	128%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	128%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	109	[NT]	[NT]	LCS-W3	106%
Surrogate toluene-d8	%		Org-016	96	[NT]	[NT]	LCS-W3	95%
Surrogate 4-BFB	%		Org-016	90	[NT]	[NT]	LCS-W3	95%

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Water						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W1	17/06/2015
Date analysed	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W1	17/06/2015
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	129559-40	<50 <50	LCS-W1	98%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	129559-40	<100 <100	LCS-W1	92%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	129559-40	<100 <100	LCS-W1	88%
TRH>C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	129559-40	<50 <50	LCS-W1	98%
TRH>C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	129559-40	<100 <100	LCS-W1	92%
TRH>C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	129559-40	<100 <100	LCS-W1	88%
Surrogate o-Terphenyl	%		Org-003	75	129559-40	92 91 RPD: 1	LCS-W1	96%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W2	17/06/2015
Date analysed	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W2	17/06/2015
Naphthalene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	LCS-W2	79%
Acenaphthylene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	LCS-W2	70%
Phenanthrene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	LCS-W2	70%
Anthracene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	LCS-W2	70%
Pyrene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	LCS-W2	72%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	LCS-W2	70%
Benzo(b,j,k) fluoranthene	µg/L	2	Org-012 subset	<2	129559-40	<2 <2	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	LCS-W2	72%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	129559-40	<1 <1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	92	129559-40	92 93 RPD: 1	LCS-W2	83%

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
OCP in water						Base Duplicate %RPD		
Date extracted	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W1	17/06/2015
Date analysed	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W1	17/06/2015
HCB	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
alpha-BHC	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	82%
gamma-BHC	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
beta-BHC	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	72%
Heptachlor	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	72%
delta-BHC	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
Aldrin	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	84%
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	75%
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
Endosulfan I	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
pp-DDE	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	79%
Dieldrin	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	79%
Endrin	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	76%
pp-DDD	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	73%
Endosulfan II	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
pp-DDT	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	LCS-W1	75%
Methoxychlor	µg/L	0.2	Org-005	<0.2	129559-40	<0.2 <0.2	[NR]	[NR]
Surrogate TCMX	%		Org-005	87	129559-40	91 97 RPD: 6	LCS-W1	80%

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Water						Base II Duplicate II %RPD		
Date extracted	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W1	17/06/2015
Date analysed	-			17/06/2015	129559-40	17/06/2015 17/06/2015	LCS-W1	17/06/2015
Aroclor 1016	µg/L	2	Org-006	<2	129559-40	<2 <2	[NR]	[NR]
Aroclor 1221	µg/L	2	Org-006	<2	129559-40	<2 <2	[NR]	[NR]
Aroclor 1232	µg/L	2	Org-006	<2	129559-40	<2 <2	[NR]	[NR]
Aroclor 1242	µg/L	2	Org-006	<2	129559-40	<2 <2	[NR]	[NR]
Aroclor 1248	µg/L	2	Org-006	<2	129559-40	<2 <2	[NR]	[NR]
Aroclor 1254	µg/L	2	Org-006	<2	129559-40	<2 <2	LCS-W1	89%
Aroclor 1260	µg/L	2	Org-006	<2	129559-40	<2 <2	[NR]	[NR]
Surrogate TCLMX	%		Org-006	87	129559-40	91 97 RPD: 6	LCS-W1	74%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			17/06/2015	[NT]	[NT]	LCS-W1	17/06/2015
Date analysed	-			17/06/2015	[NT]	[NT]	LCS-W1	17/06/2015
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	98%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	102%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	87%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	95%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	100%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W1	100%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	96%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	99%

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Metals in Waters - Total						Base Duplicate %RPD		
Date prepared	-			17/06/2015	[NT]	[NT]	LCS-W1	17/06/2015
Date analysed	-			17/06/2015	[NT]	[NT]	LCS-W1	17/06/2015
Phosphorus - Total	mg/L	0.05	Metals-020 ICP-AES	<0.05	[NT]	[NT]	LCS-W1	112%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorganics						Base Duplicate %RPD		
Date prepared	-			16/06/2015	[NT]	[NT]	LCS-W1	16/06/2015
Date analysed	-			16/06/2015	[NT]	[NT]	LCS-W1	16/06/2015
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-W1	101%
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	LCS-W1	101%
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	LCS-W1	101%
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	LCS-W1	109%
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	LCS-W1	97%
Turbidity	NTU	0.1	Inorg-022	<0.1	[NT]	[NT]	LCS-W1	98%
TKN in water	mg/L	0.1	Inorg-062	<0.1	[NT]	[NT]	LCS-W1	106%
Total Nitrogen in water	mg/L	0.1	Inorg-055/062	<0.1	[NT]	[NT]	LCS-W1	106%
QUALITYCONTROL vTRH(C6-C10)/BTEXNin Soil	UNITS	Dup. Sm#		Duplicate Base + Duplicate + %RPD				
Date extracted	-	129559-24		17/06/2015 17/06/2015				
Date analysed	-	129559-24		18/06/2015 18/06/2015				
TRHC ₆ - C ₉	mg/kg	129559-24		<25 <25				
TRHC ₆ - C ₁₀	mg/kg	129559-24		<25 <25				
Benzene	mg/kg	129559-24		<0.2 <0.2				
Toluene	mg/kg	129559-24		<0.5 <0.5				
Ethylbenzene	mg/kg	129559-24		<1 <1				
m+p-xylene	mg/kg	129559-24		<2 <2				
o-Xylene	mg/kg	129559-24		<1 <1				
naphthalene	mg/kg	129559-24		<1 <1				
Surrogate aaa-Trifluorotoluene	%	129559-24		91 74 RPD: 21				

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	129559-24	17/06/2015 17/06/2015
Date analysed	-	129559-24	18/06/2015 18/06/2015
TRHC ₁₀ - C ₁₄	mg/kg	129559-24	<50 <50
TRHC ₁₅ - C ₂₈	mg/kg	129559-24	<100 <100
TRHC ₂₈ - C ₃₆	mg/kg	129559-24	<100 <100
TRH>C ₁₀ -C ₁₆	mg/kg	129559-24	<50 <50
TRH>C ₁₆ -C ₃₄	mg/kg	129559-24	<100 <100
TRH>C ₃₄ -C ₄₀	mg/kg	129559-24	<100 <100
Surrogate o-Terphenyl	%	129559-24	73 83 RPD: 13
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	129559-24	17/06/2015 17/06/2015
Date analysed	-	129559-24	18/06/2015 18/06/2015
Naphthalene	mg/kg	129559-24	<0.1 <0.1
Acenaphthylene	mg/kg	129559-24	<0.1 <0.1
Acenaphthene	mg/kg	129559-24	<0.1 <0.1
Fluorene	mg/kg	129559-24	<0.1 <0.1
Phenanthrene	mg/kg	129559-24	<0.1 <0.1
Anthracene	mg/kg	129559-24	<0.1 <0.1
Fluoranthene	mg/kg	129559-24	<0.1 <0.1
Pyrene	mg/kg	129559-24	<0.1 <0.1
Benzo(a)anthracene	mg/kg	129559-24	<0.1 <0.1
Chrysene	mg/kg	129559-24	<0.1 <0.1
Benzo(b,j,k)fluoranthene	mg/kg	129559-24	<0.2 <0.2
Benzo(a)pyrene	mg/kg	129559-24	<0.05 <0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	129559-24	<0.1 <0.1
Dibenzo(a,h)anthracene	mg/kg	129559-24	<0.1 <0.1
Benzo(g,h,i)perylene	mg/kg	129559-24	<0.1 <0.1
Surrogate p-Terphenyl-d14	%	129559-24	83 92 RPD: 10

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QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	129559-24	17/06/2015 17/06/2015	129559-18	17/06/2015
Date analysed	-	129559-24	18/06/2015 18/06/2015	129559-18	18/06/2015
HCB	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	129559-24	<0.1 <0.1	129559-18	100%
gamma-BHC	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	129559-24	<0.1 <0.1	129559-18	88%
Heptachlor	mg/kg	129559-24	<0.1 <0.1	129559-18	88%
delta-BHC	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	129559-24	<0.1 <0.1	129559-18	105%
Heptachlor Epoxide	mg/kg	129559-24	<0.1 <0.1	129559-18	92%
gamma-Chlordane	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	129559-24	<0.1 <0.1	129559-18	104%
Dieldrin	mg/kg	129559-24	<0.1 <0.1	129559-18	98%
Endrin	mg/kg	129559-24	<0.1 <0.1	129559-18	96%
pp-DDD	mg/kg	129559-24	<0.1 <0.1	129559-18	98%
Endosulfan II	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	129559-24	<0.1 <0.1	129559-18	97%
Methoxychlor	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%	129559-24	82 101 RPD: 21	129559-18	91%

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QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	129559-24	17/06/2015 17/06/2015	129559-18	17/06/2015
Date analysed	-	129559-24	18/06/2015 18/06/2015	129559-18	18/06/2015
Aroclor 1016	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	129559-24	<0.1 <0.1	129559-18	119%
Aroclor 1260	mg/kg	129559-24	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%	129559-24	82 101 RPD: 21	129559-18	82%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD		
Date digested	-	129559-24	18/06/2015 18/06/2015		
Date analysed	-	129559-24	18/06/2015 18/06/2015		
Arsenic	mg/kg	129559-24	9 9 RPD: 0		
Cadmium	mg/kg	129559-24	<0.4 <0.4		
Chromium	mg/kg	129559-24	16 19 RPD: 17		
Copper	mg/kg	129559-24	25 23 RPD: 8		
Lead	mg/kg	129559-24	18 19 RPD: 5		
Mercury	mg/kg	129559-24	<0.1 <0.1		
Nickel	mg/kg	129559-24	9 10 RPD: 11		
Zinc	mg/kg	129559-24	37 43 RPD: 15		
QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	129559-33	18/06/2015 18/06/2015	129559-23	18/06/2015
Date analysed	-	129559-33	19/06/2015 19/06/2015	129559-23	19/06/2015
pH 1:5 soil:water	pH Units	129559-33	5.3 5.3 RPD: 0	[NR]	[NR]
Electrical Conductivity 1:5 soil:water	µS/cm	129559-33	140 140 RPD: 0	[NR]	[NR]
Chloride, Cl 1:5 soil:water	mg/kg	129559-33	10 10 RPD: 0	129559-23	70%
Sulphate, SO4 1:5 soil:water	mg/kg	129559-33	200 210 RPD: 5	129559-23	93%
Resistivity in soil*	ohmm	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	129559-18	17/06/2015 22/06/2015
Date analysed	-	129559-18	18/06/2015 22/06/2015
Aroclor 1016	mg/kg	129559-18	<0.1 <0.1
Aroclor 1221	mg/kg	129559-18	<0.1 <0.1
Aroclor 1232	mg/kg	129559-18	<0.1 <0.1
Aroclor 1242	mg/kg	129559-18	<0.1 <0.1
Aroclor 1248	mg/kg	129559-18	<0.1 <0.1
Aroclor 1254	mg/kg	129559-18	0.1 0.2 RPD: 67
Aroclor 1260	mg/kg	129559-18	<0.1 <0.1
Surrogate TCLMX	%	129559-18	79 94 RPD: 17

Report Comments:

Total Recoverable Hydrocarbons in soil: # Percent recovery is not possible to report as the high concentration of analytes in the sample/s have caused interference.

TRH_BTEx_W_V: Subsampled from amber bottle.

PAH_S:PQL has been raised due to interference from analytes(other than those being tested) in the sample/s.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Asbestos ID was analysed by Approved Identifier:	Lulu Scott
Asbestos ID was authorised by Approved Signatory:	Lulu Scott

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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 sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

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.

SAMPLE RECEIPT ADVICE

Client Details	
Client	Geoenviro Consultancy Pty Ltd
Attention	Solern Liew

Sample Login Details	
Your Reference	JC15236A, Edmondson Park
Envirolab Reference	129559
Date Sample Received	15/06/2015
Date Instructions Received	15/06/2015
Date Results Expected to be Reported	23/06/2015

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	39 Soils, 1 Water
Turnaround Time Requested	Standard
Temperature on receipt (°C)	12.3
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

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@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

Sample Id	Acid Extractable metals in soil	Asbestos ID - soils	CEC	Chloride, Cl 1:5 soil:water	Chloride, Cl	Electrical Conductivity 1:5 soil:water	Electrical Conductivity	HM in water - dissolved	Metals in Waters - Total	OCP in water	Organochlorine Pesticides in soil	PAHs in Water	PAHs in Soil	PCBs in Soil	PCBs in Water	pH 1:5 soil:water	pH	Resistivity in soil*	Sulphate, SO4 1:5 soil:water	Sulphate, SO4	svTRH (C10-C40) in Soil	svTRH (C10-C40) in Water	TKN in water	Total Dissolved Solids (grav)	Total Nitrogen in water	Turbidity	vTRH(C6-C10)/BTEXN in Soil	vTRH(C6-C10)/BTEXN in Water	On Hold
TP 2-0.0-0.1																													✓
TP 3-0.0-0.1																													✓
TP 13-0.0-0.1																													✓
TP 9-0.0-0.1																													✓
TP 10-0.0-0.1																													✓
TP 11-0.0-0.1																													✓
TP 15-0.0-0.1																													✓
TP 16-0.0-0.1																													✓
TP 17-0.0-0.1																													✓
TP 14-0.0-0.1																													✓
TP 18-0.0-0.1																													✓
TP 21-0.0-0.1																													✓
C1-0.0-0.1	✓										✓			✓															
C2-0.0-0.1	✓										✓			✓															
C3-0.0-0.1	✓										✓			✓															
C4-0.0-0.1	✓										✓			✓															
TP 1-0.0-0.1	✓	✓	✓			✓					✓		✓	✓		✓					✓						✓		
TP 8-0.0-0.1	✓	✓									✓		✓	✓							✓						✓		
TP 19-0.3-0.4	✓	✓									✓		✓	✓							✓						✓		
TP 22-0.0-0.1	✓	✓									✓		✓	✓							✓						✓		
TP 26-0.0-0.1	✓	✓									✓		✓	✓							✓						✓		
TP 29-0.0-0.1	✓	✓									✓		✓	✓							✓						✓		
Duplicate A	✓			✓		✓					✓		✓	✓		✓			✓		✓						✓		
Silt	✓	✓									✓		✓	✓							✓						✓		
TP 1-0.5-0.6				✓		✓										✓		✓	✓										
TP 3-0.0-0.1			✓			✓										✓													
TP 3-0.0-0.1				✓		✓										✓			✓										
TP 3-0.0-0.1				✓		✓										✓			✓										
TP 13-0.0-0.1						✓										✓													
TP 13-0.0-0.1			✓	✓		✓										✓		✓	✓										
TP 13-0.0-0.1				✓		✓										✓			✓										
TP 17-0.0-0.1						✓										✓													
TP 17-0.0-0.1				✓		✓										✓			✓										
TP 17-0.0-0.1				✓		✓										✓		✓	✓										
TP 22-0.0-0.1			✓			✓										✓													
TP 22-0.0-0.1			✓	✓		✓										✓		✓	✓										
TP 22-0.0-0.1				✓		✓										✓			✓										
TP 31-0.0-0.1						✓										✓													



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

TP 31-0.0-0.1				✓		✓									✓		✓	✓								
DW					✓		✓	✓	✓	✓		✓			✓		✓			✓		✓	✓	✓	✓	✓



Location: No 150 Jardine Drive, Edmondson Park

Job No: JC15236A

Envirelab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9830 6200

Job No: 129559

Date Received: 15/6/15
Time Received: 6:30 pm
Received by: LB
Temp: Cool/Ambient
Cooling: Ice/Sealpak
Security: Intact/Broken/None



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: JC15236A Client: Project: Proposed Residential Subdivision Development Location: No 150 Jardine Drive, Edmondson Park	External Laboratory Details: Laboratory name: Envirolab Services Pty Ltd Address: 12 Ashley Street Chatswood Contact: Tania Notaris
---	--

Sample Date: 11/06/2015
Sampled By: SG/AT
Project Manager: SL
Store Location:

Sampling Details		Sample Type		Test Required (I)		Test Performed (X)									
Location	Depth (m)	From	To	Soil	Water	Metals (As Cd Cr Cu Pb Zn Ni Hg)	OCP / PCB	Combination 5a	Combination 5	pH	EC	CEC/ESP	Cl / SO4	Resistivity	CEC
13	C1	0.00	0.10	DG											
14	C2	0.00	0.10	DG											
15	C3	0.00	0.10	DG											
16	C4	0.00	0.10	DG											
17	TP 1	0.00	0.10	DG											
18	TP 8	0.00	0.10	DG											
19	TP 19	0.30	0.40	DG											
20	TP 22	0.00	0.10	DG											
21	TP 26	0.00	0.10	DG											
22	TP 29	0.00	0.10	DG											
23	Duplicate A	-	-	DG											
NR	DW	-	-	WG											
24	SILT	-	-	DG											
17	TP 1	0.00	0.10												
25	TP 1	0.50	0.60												

Relinquished by		Received By	
Laboratory	Name	Signature	Date
GeoEnviro Consultancy	Steven Goss	<i>SG</i>	12/06/2015


Legend		Y Keep Sample N Discard Sample	
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		



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										External Laboratory Details:																	
Job Number: JC15236A					Sample Date: 11/06/2015					Laboratory name: Envirolab Services Pty Ltd																	
Client:					Sampled By: SG/AT					Address: 12 Ashley Street																	
Project: Proposed Residential Subdivision Development					Project Manager: SL					Chatswood																	
Location: No 150 Jardine Drive, Edmondson Park					Store Location:					Contact: Tania Notaris																	
Sampling Details				Test Required (✓)				Test Performed (X)																			
Location		Depth (m)		Sample Type		Metals (As Cd Cr Cu Pb Zn Ni Hg)		OCP / PCB		Combination 5a		Combination 5		pH		EC		CEC/ESP		Cl / SO4		Resistivity		CEC		Keep Sample	
						From To																					
26	TP 3						0.00 0.10																				
27	TP 3						0.50 0.60																				
28	TP 3						2.70 2.80																				
29	TP 13						0.00 0.10																				
30	TP 13						0.50 0.60																				
31	TP 13						1.50 1.60																				
32	TP 17						0.00 0.10																				
33	TP 17						0.60 0.70																				
34	TP 17						2.00 2.10																				
35	TP 22						0.00 0.10																				
36	TP 22						0.70 0.70																				
37	TP 22						1.20 1.30																				
38	TP 31						0.00 0.10																				
39	TP 31						0.50 0.60																				

Relinquished by				Received By			
Laboratory	Name	Signature	Date	Laboratory	Name	Signature	Date
GeoEnviro Consultancy	Steven Goss		12/06/2015				

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

WG Water Sample, Amber Glass

CERTIFICATE OF ANALYSIS

129559-A

Client:

Geoenviro Consultancy Pty Ltd
PO Box 1543, Macquarie Centre
North Ryde
NSW 2113

Attention: Solern Liew

Sample log in details:

Your Reference:	JC15236A, Edmondson Park
No. of samples:	Additional testing on soils
Date samples received / completed instructions received	15/06/2015 / 24/06/15

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: / Issue Date:	30/06/15 / 29/06/15
Date of Preliminary Report:	Not Issued

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

Results Approved By:



Jacinta Hurst
Laboratory Manager

Acid Extractable metals in soil						
Our Reference:	UNITS	129559-A-7	129559-A-8	129559-A-9	129559-A-10	129559-A-11
Your Reference	-----	TP 15	TP 16	TP 17	TP 14	TP 18
Depth	-----	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	25/06/2015	25/06/2015	25/06/2015	25/06/2015	25/06/2015
Date analysed	-	25/06/2015	25/06/2015	25/06/2015	25/06/2015	25/06/2015
Zinc	mg/kg	67	71	120	170	180

Acid Extractable metals in soil		
Our Reference:	UNITS	129559-A-12
Your Reference	-----	TP 21
Depth	-----	0.0-0.1
Date Sampled		11/06/2015
Type of sample		Soil
Date digested	-	25/06/2015
Date analysed	-	25/06/2015
Zinc	mg/kg	51

Moisture						
Our Reference:	UNITS	129559-A-7	129559-A-8	129559-A-9	129559-A-10	129559-A-11
Your Reference	-----	TP 15	TP 16	TP 17	TP 14	TP 18
Depth	-----	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	25/06/2015	25/06/2015	25/06/2015	25/06/2015	25/06/2015
Date analysed	-	26/06/2015	26/06/2015	26/06/2015	26/06/2015	26/06/2015
Moisture	%	18	18	16	31	28

Moisture		
Our Reference:	UNITS	129559-A-12
Your Reference	-----	TP 21
Depth	-----	0.0-0.1
Date Sampled		11/06/2015
Type of sample		Soil
Date prepared	-	25/06/2015
Date analysed	-	26/06/2015
Moisture	%	14

Method ID	Methodology Summary
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

Client Reference: JC15236A, Edmondson Park

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			25/06/2015	[NT]	[NT]	LCS-8	25/06/2015
Date analysed	-			25/06/2015	[NT]	[NT]	LCS-8	25/06/2015
Zinc	mg/kg	1	Metals-020 ICP-AES		[NT]	[NT]	LCS-8	96%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

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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.

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Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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 sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

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.

SAMPLE RECEIPT ADVICE

Client:

Geoenviron Consultancy Pty Ltd
PO Box 1543, Macquarie Centre
North Ryde NSW 2113

ph: 9679 8733

Fax: 9679 8744

Attention: Solern Liew

Sample log in details:

Your reference:

JC15236A, Edmondson Park

Envirolab Reference:

129559-A

Date received:

15/06/2015

Date results expected to be reported:

1/07/15

Samples received in appropriate condition for analysis:

YES

No. of samples provided

Additional testing on soils

Turnaround time requested:

Standard

Temperature on receipt (°C)

12.3

Cooling Method:

Ice Pack

Sampling Date Provided:

YES

Comments:

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:

Water samples - 1 month

Soil and other solid samples - 2 months

Samples collected in canisters - 1 week. Canisters will then be cleaned.

All other samples are not retained after analysis

If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst

ph: 02 9910 6200 fax: 02 9910 6201

email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Simon Song

From: Jacinta Hurst
Sent: Wednesday, 24 June 2015 11:16 AM
To: Steven Goss
Cc: Simon Song
Subject: RE: Results for registration '129559 - JC15236A, Edmondson Park'

No problem

Regards,

Jacinta Hurst | Sydney Laboratory Manager | Envirolab Services Pty Ltd

Great Chemistry.Great Service

12 Ashley Street Chatswood NSW 2067

T 612 9910 6200 F 612 9910 6201 M 0407 003 037 <mailto:jhurst@envirolab.com.au> | <http://www.envirolab.com.au>

-----Original Message-----

From: Steven Goss [<mailto:sg.geoenviro@exemail.com.au>]
Sent: Wednesday, 24 June 2015 09:41
To: Jacinta Hurst
Subject: RE: Results for registration '129559 - JC15236A, Edmondson Park'

Hi Jacinta

7.8.9. 10-11.12.

Could we please get Zinc Analysis on the Sub-Samples forming C3 and C4

Thank You

129559 A
std T/A
due 1/7

Steven Goss

Geotechnical/Environmental Scientist

GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown, 2148 PO Box 1543, Macquarie Centre, North Ryde, 2113

Tel: (02) 9679 8733 | Fax: (02) 9679 8744 | Mob: 0401 256 986

Email: sg.geoenviro@exemail.com.au

IMPORTANT: It is your responsibility to scan this email and any attachments for computer viruses. This email is intended solely for the use of the named addressee and may contain confidential or privileged information. If you are not the intended recipient, you must not disclose, disseminate, reproduce, distribute or otherwise use the information in this email or attachments. If you have received this email in error, please notify the sender immediately and delete this email and any attachments and destroy all copies.

-----Original Message-----

From: Solern Liew [<mailto:sg.geoenviro@exemail.com.au>]
Sent: Wednesday, 24 June 2015 7:55 AM
To: 'Steven Goss'

Subject: FW: Results for registration '129559 - JC15236A, Edmondson Park'

Hi Steven

Please review and reschedule as appropriate

Thank You

Solern Liew

GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown, 2148 PO Box 1543, Macquarie Centre, North Ryde, 2113

Tel: (02) 9679 8733 | Fax: (02) 9679 8744 | Mob: 0413 995 526

Email: geoenviro@exemail.com.au

IMPORTANT: It is your responsibility to scan this email and any attachments for computer viruses. This email is intended solely for the use of the named addressee and may contain confidential or privileged information. If you are not the intended recipient, you must not disclose, disseminate, reproduce, distribute or otherwise use the information in this email or attachments. If you have received this email in error, please notify the sender immediately and delete this email and any attachments and destroy all copies.

-----Original Message-----

From: Jacinta Hurst [<mailto:JHurst@envirolab.com.au>]

Sent: Tuesday, 23 June 2015 5:36 PM

To: geoenviro@exemail.com.au

Subject: Results for registration '129559 - JC15236A, Edmondson Park'

Please refer to attached for:

a copy of the Certificate of Analysis

a copy of the Invoice

a copy of the COC

an excel file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:

Jacinta Hurst on jhurst@envirolabservices.com.au or David Springer on dspringer@envirolabservices.com.au

or

Tania Notaras on tnotaras@envirolabservices.com.au

Regards

Envirolab Services

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APPENDIX E

Unexpected Asbestos Finds Protocol

Unexpected Asbestos Finds

If asbestos is detected in area not identified as containing asbestos prior to, or during, bulk excavation works the following 'Unexpected Finds Protocol' will apply:

- Upon discovery of suspected asbestos containing material, the site manager is to be notified and the affected area closed off by the use of barrier tape and warning signs. Warning signs shall be specific to Asbestos Hazards and shall comply with the Australian Standard 1319-1994 – Safety Signs for the Occupational Environment;
- Work shall comply with WorkCover requirements including *Working with Asbestos*, 2008;
- An OHS consultant or a hygienist is to be notified to inspect the area and confirm the presence of asbestos and determine whether the asbestos is classified as friable or bonded asbestos and determine the extent of remediation works to be undertaken. A report detailing this information will be compiled by the OHS consultant and provided to the Site Manager (SM) (or his representative);
- The impacted soil will be classified and disposed of, as a minimum, as Special Waste (Asbestos) at an appropriately licensed facility. In dry and windy conditions the stockpile will be kept lightly wetted and may be covered with plastic sheet whilst awaiting disposal;
- All work associated with asbestos in soil will be undertaken by a contractor holding a class AS-1 Licence (friable) or AS2 Licence for bonded asbestos, as appropriate. WorkCover must be notified 7 days in advance of any asbestos works;
- Monitoring for airborne asbestos fibres is to be carried out during the soil excavation in asbestos contaminated materials;
- Documentary evidence (weighbridge dockets) of correct disposal is to be provided to the Principal (or their representative);
- At the completion of the excavation, a clearance inspection is to be carried out, soil samples taken and analysed for asbestos fibres followed by written certification provided by an OHS Consultant that the area is safe to be accessed and worked (with respect to asbestos impact). If required, the filling material remaining in the inspected area can be covered/ sealed by an appropriate physical barrier layer of non-asbestos containing material prior to sign-off;
- Details are to be recorded in the site record system;
- Following clearance by an OHS Consultant or hygienist, the area may be reopened for further excavation or construction work.

APPENDIX F

Important Information about your Environmental Site Assessment Explanatory Notes



IMPORTANT INFORMATION REGARDING YOUR ENVIRONMENTAL SITE ASSESSMENT

These 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 ENVIRONMENTAL 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.