



DETAILED ENVIRONMENTAL SITE ASSESSMENT

**144 Boronia Road
Greenacre, NSW 2190**

Lot 4 DP 236854

Prepared for:

Mr George Valiotis

Prepared by:

DLA Environmental

DL3184_S001137

November 2013

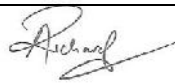
Sydney
Unit 2B 30 Leighton Place
Hornsby NSW 2077
Phone: 9476 1765
Fax: 9476 1557
Email: dlassociates@bigpond.com

Maitland
42B Church Street
Maitland NSW 2320
PO Box 137
Branxton NSW 2335
Phone: 4933 0001
Email: dla.hunter@bigpond.com

ABN 36 926 003 197

Revision R01

Quality Information

Document	Detailed Environmental Site Assessment		
Job Reference	DL3184_S001137		
Date	21 st November 2013		
Prepared by	Simon Spyrdz	Author	
Reviewed by	Anthony Richard	DLA Reviewer	

Distribution of Current Report

Copies	Report	Recipient
1 (Electronic)	R00	Mr George Valiotis
1 (Electronic)	R00	DLA Environmental On File

Authorisation

Revision	Revision	Details	Authorised	
	Date		Name/Position	Signature
R00	21-11-12	Detailed Environmental Site Assessment	Richard Bolton Sydney Regional Manager	

EXECUTIVE SUMMARY

DLA Environmental (DLA) was commissioned by Mr George Valiotis to undertake a Detailed Environmental Site Assessment of the property identified as Lot 4 in DP 236854 located at 144 Boronia Road, Greenacre, NSW (Site). The land is currently occupied by a residential house at the front of the site, with the rear concreted over and currently being utilised as private car parking. The Site Assessment was undertaken following the completion of a Preliminary Site Investigation, and prior to the proposed future residential redevelopment of the Site. The property is zoned Low Density Residential in accordance with the Bankstown Local Environmental Plan 2001.

The Site is located approximately fifteen kilometres (15km) west south-west of the Sydney CBD at 144 Boronia Road Greenacre, NSW, 2190 and is formally identified as Lot 4 DP 236854. The property is currently zoned Low Density Residential in accordance with the Bankstown Local Environmental Plan 2001 and is approximately 1,400m² (0.14Ha) in area.

The site currently consists of a single story fibro house located at the front of the property, with grassed yard north and east of the house. A paved driveway extends down the western side of the house, opening up to a fully concreted back yard. A carport type structure is located at the rear of the property with an enclosed room present on the eastern side of the structure. The carport structure was constructed of metal and compressed cement sheeting, with a hydraulic car lift and high pressure washing system installed.

Refer to **Figure 1** – Site Location and to **Figure 2** – Site Layout with Sampling Locations.

Soils sampled across the Site were assessed against the Site Acceptance Criteria (SAC) provided by the National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM) 2013, Table 1A(1) Residential A - Residential with Garden / Accessible soil, as applicable to the identified potential future land use of the site.

The investigation and assessment was conducted using the following methods:

- Search and review of records and site plans available locally and from State Regulatory Authorities, including WorkCover, Department of Lands and NSW EPA;
- Review of historical aerial photographs available from the Land Information Centre and past Site reports;

- Reviewing all environmental conditions of the Site including the geology and hydrogeology;
- Providing a comprehensive overview of the Sites past and current land uses and potential contamination issues, and;
- Investigation of soil and groundwater chemical concentrations relative to the NEPM 2013 HIL's.

The assessment and report has been conducted in accordance with the following:

- The National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM), National Environment Protection Council 2013;
- NSW EPA Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2011;
- NSW EPA Contaminated Sites: Guidelines for the NSW Site Auditor Scheme, second edition 2006;
- NSW EPA Guidelines for Assessing Service Station Sites, 1994;
- The Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, Australian and New Zealand Environment and Conservation Council and the National Health and Medical Research Council (NHMRC), January 1992, and;
- NSW DECCW Waste Classification Guidelines, 2009.

A WorkCover NSW search regarding the site identified as Lot 4 DP 236854, 144 Boronia Road Greenacre NSW, within their Stored Chemical Information Database (SCID), indicated that Dangerous Goods Licenses have been held for the premises in the past. The Dangerous Good Search identified one (1) 1,000L Underground Storage Tank (UST) to be present on the Site. The tank was installed on the 31st May 1956 for the storage of Mineral Spirits. A notice has been included in the WorkCover records identifying the licence was cancelled and the tank was to be abandoned.

An inspection of the site identified the location of the tank to be as described in the WorkCover licence documentation, positioned at the south eastern corner of the site, in front of the office building located at the eastern corner of the car port/awning structure. However the tank had been removed previously to the assessment, DLA are unsure of when this occurred or who removed the tank.

Field investigations at Site were undertaken on the 11th October 2013 and comprised of the following:

- Inspect Site and conduct a review of Site history and aerial photographs to identify appropriate sampling locations prior to the commencement of work.
- The sampling program included natural soils and imported fill materials.
- Drilling of nine (9) investigation bore holes onsite.
- Collection of seventeen (17) primary soil samples with an additional collection of two (2) intra laboratory duplicate samples, and one (1) inter laboratory duplicate sample.
- Review of A.D Envirotech Australia Pty Ltd April 2013 Preliminary Environmental Site Investigation report for the site.
- Field observations of the Site identified natural soils to generally be present on the site under the imported sand material used for the concrete slab construction. No areas of deep fill were identified outside the tank pit area.

The chemical analysis of site soils indicates that no contamination of the site was identified to be present in any natural soils onsite. Minor detections of PAHs and pesticides were recorded in some samples from fill materials; however concentrations recorded were well below the adopted criteria, and pose no significant risk to human health or the environment. One sample at BH5-0.2 recorded a TRH detection, however was significantly lower than the most sensitive TRH criteria of sand at less than 1m bgl.

The bore hole drilled into the tank pit area (BH2) confirmed the findings of the visual inspection, that the tank was not present and has been previously removed from site. Samples of the fill soils used to backfill the tank pit excavation were noted to be odorous with minor staining at the time of sampling. Results obtained from fill soils at a depth of between

1.0m and 2.0m bgl recorded concentrations of F2 hydrocarbons within the HIL Vapour Intrusion criteria for sand based soils located at between 1-2m bgl.

Hydrocarbon criteria is derived from a Vapour Intrusion potential, and as such, no vapour criteria is provide for F3 and F4 TRH fractions, as they are non-volatile and are not of concern for vapour intrusion. With the development of the TRH Vapour Intrusion criteria, the depth of soils below ground level are relative to the criteria adopted. Soils closer to the surface (0 -1m bgl) have a more sensitive criteria, than soils at depth (1-2m, 2-3m and >4m), reflecting the potential exposure capacities of the materials at depth.

Two (2) samples analysed from within the tank pit fill material between a depth of 1-2m bgl returned compliant concentrations of TRH against the Vapour Intrusion criteria for sands between 1-2m. If TRH compliant soils analysed from the depth between 1-2 metres are to be excavated and placed <1m below the surface of the site, remediation actions will be requires, however if remaining in place, soils are compliant with the site criteria.

BH2 drilling extended through the base of the tank pit into natural heavy orange clay soils, with laboratory analysis of the underlying soils not identifying any TRH compounds above the laboratory detection limit. No detections of TRH compounds immediately below the base of the tank excavation, indicates that no contamination has migrated down into natural soils, or into groundwater.

The completion of this report concludes that the Site was deemed suitable for the proposed end land use as defined by the NEPM 2013 Residential A - Residential with Garden / Accessible soil landuse criteria. It should be noted that this investigation report does not guarantee that all soils at the Site are natural and identifies the presence of fill material at the site. However, visual inspection supported by chemical analysis of soil sampling, demonstrated that the residual soil in the study area meets the agreed criteria: NEPM (1999) Revised 2013 Table 1A(1) Residential A – Residential with Garden / Accessible soil

TABLE OF CONTENTS

Executive Summary	i
1.0 INTRODUCTION	1
1.1 General.....	1
1.2 Objectives of the Assessment.....	1
1.3 Data Quality Objectives.....	2
1.4 Statutory Framework.....	7
1.5 SCOPE OF WORK.....	9
2.0 SITE DESCRIPTION.....	11
2.1 Site Identification.....	11
2.2 Proposed future Land use	11
2.3 Environmental Setting.....	11
2.3.1 Boundaries and Surrounding Land Use	11
2.3.2 Site Topography and Hydrogeology.....	12
2.3.3 Site Geology and Soils	13
2.3.4 Acid Sulphate Soils.....	13
2.3.5 Site Meteorology.....	13
2.4 Development Controls	14
2.4.1 The Bankstown City Council Section 149 Certificate.....	14
2.4.2 Work Cover Dangerous Goods Search.....	15
2.4.3 Contaminated Land Record Search.....	15
2.5 Site History	15
2.5.1 Aerial Photograph Review	15
2.5.2 Historical Title Search.....	16
2.5.3 Heritage / Archaeological Items	17
2.5.4 Site History Summary	17
2.6 Off-Site Observations.....	17
2.7 Potential Contamination Summary	17
3.0 SITE INVESTIGATION PLAN.....	18
3.1 Field Investigation Procedure.....	18
3.1.1 Sampling Strategy	18
3.1.2 Soil Collection.....	19
3.1.3 Groundwater Collection	19
3.1.4 Analytical Strategy.....	19

3.2	Soil Criteria	21
3.2.1	Rationale for the Selection of Assessment Criteria	21
3.2.2	Soil Criteria.....	21
3.2.3	Limitations of the Assessment Criteria.....	23
4.0	Results.....	24
4.1	Field observations.....	24
4.1.1	General.....	24
4.1.2	Off-Site Observations	24
4.2	Soil Laboratory Results	25
4.3	QA/QC Comments	28
5.0	DISCUSSION.....	29
6.0	CONCLUSIONS	30
	Appendix C1 – Field Quality Control	36
	Appendix C2 – Laboratory Analytical and Quality Plan	40

FIGURES

Figure 1	Site Location
Figure 2	Site Layout with Sample Location

APPENDICES

Appendix A	Sample Log and NATA Certified Analytical Data
Appendix B	95% UCL Data Calculations
Appendix C	Quality Assurance and Quality Control
Appendix D	Section 149 Planning Certificate
Appendix E	Dangerous Goods Search
Appendix F	Historical Title Search
Appendix G	Groundwater Bore Works Search
Appendix H	Bore Logs

1.0 INTRODUCTION

1.1 General

DLA Environmental (DLA) was commissioned by Mr George Valiotis to undertake a Detailed Environmental Site Assessment of the property identified as Lot 4 in DP 236854 located at 144 Boronia Road, Greenacre, NSW (Site). The land is currently occupied by a residential house at the front of the site, with the rear concreted over and currently being utilised as private car parking. The Site Assessment was undertaken following the completion of a Preliminary Site Investigation, and prior to the proposed future residential redevelopment of the Site. The property is zoned Low Density Residential in accordance with the Bankstown Local Environmental Plan.

Refer to **Figure 1** – Site Location and **Figure 2** – Site Location with Sample Location.

Soils sampled across the Site were assessed against the Site Acceptance Criteria (SAC) provided by the National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM) 2013, Table 1A(1) Residential A - Residential with Garden / Accessible soil, as applicable to the identified potential future land use of the site.

1.2 Objectives of the Assessment

The NSW Office of Environment and Heritage (OEH) indicate that a Detailed Site Environmental Investigation should provide comprehensive information on:

- Any issues raised in preliminary investigations;
- The type, extent and level of contamination and assess;
- Contaminant dispersal in the air, surface water, soil and dust;
- The potential effects of contaminants on public health and the environment;
- Where applicable, off-site impacts on soil, sediment and biota, and;
- The adequacy and completeness of all information available to be used in making decisions on remediation.

The project objectives of this Detailed Environmental Site Assessment are to satisfy the stated EPA Detailed Site Investigation requirements in accordance with *NSW EPA Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2000*. Specifically this investigation will consider the potential for suspected historical activities to have caused contamination at the Site and determine land use suitability for the proposed redevelopment.

The proposed investigation program and the Detailed Site Assessment are designed to assess the presence of any unacceptable on Site or off Site risk to human health or the environment. The report will draw conclusions regarding the land use suitability of the Site for the proposed residential development or provide recommendations to enable such conclusions and determine the need for a Remediation Action Plan.

1.3 Data Quality Objectives

The National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (NEPM) and Australian Standard (AS) 4482.1-2005 recommend that data quality objectives (DQOs) be implemented during the investigation of potentially contaminated sites. The DQO process described in AS 4482.1-2005 *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil Part 1: Non-Volatile and Semi-Volatile Compounds* outlines seven (7) distinct steps to outline the project goals, decisions, constraints and an assessment of the project uncertainties and how to address these when they arise. They define the quality and quantity of data needed to support decisions relating to the environmental condition of a site. They also outline the defining criteria that a data collection design should satisfy, including when, where, how and how many samples to be collected.

The DQO's for the investigations were to:

State the Problem

Determine, from a contamination point of view, if the land is suitable to be developed for Residential with Accessible Soil land use in accordance with the requirements of *State Environmental Planning Policy No. 55* and the *Environmental Planning and Assessment Act, 1979*. This includes researching previous site investigations, historical searches (titles, landuse of site and adjacent sites, and aerial photographs), identification of chemicals of concern, media they inhabit and possible migration pathways (to and from the site), potential exposures to human or/and environmental receptors, and concerns with the potential clean up and desired future landuse of the property.

Statistical evidence needs to be provided that the identified Site does not present an unacceptable risk to human health or the environment and is suitable for the intended land use.

Identify the Decision

The decisions to be made on the contamination and the new environmental data required includes considering relevant site contamination criteria for each medium (fill, soil and sediment). A proposed use of the 95% UCL on the mean concentrations for all soil chemicals of potential concern must be less than the site criteria identified for Standard Residential land use suitability. Decisions include:

- *Do contaminant concentrations in soil and groundwater comply with the stated Site Acceptance Criteria (SAC)?*
- *Do residual soils or groundwater pose an unacceptable risk to Human Health or the environment?*

Identify Inputs to Decision

This step requires the identification of the environmental variables/characteristics that need measuring, identification of which media (fill, soil etc.) need to be collected, identification of the site criteria for each medium of concern and appropriate analytical testing. Inputs include:

- *Systematic soil sampling and representative analysis of all residual materials identified at the Site.*
- *Determination of the general concentrations of heavy metals, hydrocarbons, pesticides PCB's and asbestos across the Site.*
- *Statistical analysis of the analytical data*
- *Identifying current and future potential receptors and the likelihood of exposure to unacceptable levels of contamination both on and off the Site.*

Define the Study Boundaries

Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision. To identify the boundaries (both spatial and temporal) of the investigation and to identify any restrictions that may hinder the assessment process. This includes on and off site inspections and discussions with informed individuals.

The physical study will focus on fill materials and natural soils within the confines of the proposed lot boundary.

Refer to **2.0** – Site Description

Develop a Decision Rule

To define the parameter(s) of interest, specify the action level and provide a logical basis for choosing from alternative actions.

The Site will be considered suitable for its intended land use if soils comply with the Health Investigation Levels (HIL) provided in NEPM 2013, Table 1A(1) as determined by the following Site Assessment Criteria (SAC) being applied to the data:

- *The 95% Upper Confidence Limit (UCL) of the arithmetic mean for each Contaminant of Concern must comply with the respective HIL.*
- *The individual contaminant concentration should not exceed the HIL by more than 250%, and;*
- *The standard deviation of individual contaminants should not exceed 50% of the HIL;*

The Site will be deemed to contain contamination “hotspots” if any of the above criteria are unfulfilled.

The following publications have been reviewed with respect to the assessment criteria and sampling methodology of soils and water at the Site

- NSW EPA Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites 2011;

- Schedule B1 Guideline on the Investigation Levels for Soil and Groundwater from the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 Table 1A(1) Column A – Residential with Accessible Soils;
- NSW DEC Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination, 2007;
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000);
- Standards Australia AS4482.1 2nd Edition: Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-Volatile and Semi-Volatile Compounds, 2005;
- NSW EPA Contaminated Sites: Sampling Design Guidelines, 1995, and;
- NSW EPA Guidelines for the NSW Site Auditor Scheme, second edition 2006.

Refer to **3.2 – Soil and Groundwater Criteria**

Specify Limits on Decision Errors

Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data. Incorrect decisions are caused by using data that is not representative of site conditions because of sampling or analytical error.

A Site under investigation is assumed to be contaminated until statistically proven otherwise (eg: H_0 = Analyte 95% UCL exceeds the SAC), therefore two types of error are possible; Type 1 error (α or false negative), where the Site is assessed to be uncontaminated when it is actually is, and Type 2 error (β or false positive), when the Site is assessed to be contaminated though is actually not.

The more severe consequence is with Type 1 errors (α) since the risk of jeopardising human or environmental health outweighs the consequences of additional remediation costs. Therefore to achieve appropriate confidence in the data probabilities are set at 5% for Type 1 error, whilst Type 2 errors are set at a 20% probability limit.

Field and laboratory quality controls are implemented to avoid error and to ensure the action levels exceed the measurement detection limits for Contaminants of Concern. This is achieved

by analysing concentrations detected in field blanks, rinsate blanks, volatile-spiked trip samples and laboratory method blanks. The performance of decision making inputs will be enhanced through the application of Data quality indicators (DQI), defined as follows:

Precision	A quantitative measure of the variability (or reproducibility) of data;
Accuracy	A quantitative measure of the closeness of reported data to the “true” value;
Representativeness	The confidence (expressed qualitatively) that data are representative of each media present on the Site.
Completeness	A measure of the amount of useable data from a data collection activity;
Comparability	The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.

DLA Environmental adopted the following methods to satisfy all DQI's:

Table 1: Data Quality Indicators

Data Precision and Accuracy	
Adequate Sampling Density	Sampling carried out in accordance with procedure B of the NSW EPA <i>Contaminated Sites: Sampling Design Guidelines</i> , 1995; Use of analytical laboratories with adequately trained and experienced testing staff experienced in the analyses undertaken, with appropriate NATA certification.
Acceptable field and laboratory Relative Percentage Difference (RPD) for duplicate comparison*	>10 x LOR: 30% inorganics; 50% organics (Field) <10 x LOR: Assessed on individual basis (Field) >5 x LOR: 50% (laboratory) <5 x LOR: No Limit (laboratory) *Done in accordance with AS4482.1 – 2005 field duplicate RPD criteria is increased with organic analytes and for low concentrations. These criteria cannot reasonably exceed the laboratory's precision, therefore laboratory criteria have been adopted.
Trip Blanks/ Rinsate Blanks	No Detection above LOR
Trip Spikes	Recoverable concentrations of volatiles between 60 – 140%
Adequate laboratory performance	Based on acceptance criteria of laboratory as specified on certificate of analysis: includes: blank samples, matrix spikes, control samples, and surrogate spike samples
Data Representativeness	
Sample and analysis selection	Representativeness of all potential contaminants
Trip Blanks/ Rinsate Blanks	No Detection above LOR
Trip Spikes	Recoverable concentrations of volatiles between 60 – 140%
Duplicate Samples	Adequate duplicate, split, rinsate and trip blank sample numbers
Laboratory selection	Adequate laboratory internal quality control and quality assurance methods, complying with the NEPM.

Table 1: Data Quality Indicators Cont.

Documentation Completeness	
Chain of custody records	Laboratory sample receipt information received confirming receipt of samples intact and appropriate chain of custody NATA registered laboratory results certificates provided
Data Completeness	
	Analysis for all potential contaminants of concern. Field duplicate sample numbers complying with NEPM Rinsate samples recovered regularly Trip spike samples prepared and sent with field samples regularly
Comparability	
	Use of NATA registered laboratories Test methods consistent for each sample in accordance with the Sampling Analysis and Quality Plan Detailed logs of all sample locations to be recorded Test methods comparable between primary and secondary laboratory Acceptable RPD's between original samples and field duplicates and inter-laboratory triplicate samples.

Optimise the Design for Obtaining Data

Identify a resource-effective sampling and analysis design for data collection that satisfy the DQO's.

The sampling and analytical plan is designed to avoid Type 1 and Type 2 errors and includes defining minimum sample numbers required to detect contamination as determined with procedures provided in the NSW EPA 1995 Sampling Design Guidelines and AS 4482.1 - 2005 and appropriate quality control procedures.

Refer to **3.0** – Site Investigation Plan.

1.4 Statutory Framework

The pollution control and environmental planning statutes in NSW, which most likely apply are:

- Contaminated Land Management Act 1997;
- Protection of the Environment Operations Act 1997;
- Dangerous Goods Act 1975;

- Ozone Protection Act 1989;
- Waste Minimisation and Management Act 1995;
- Water Board (Corporatisation) Act 1994;
- Environmental Planning and Assessment Act 1979, and;
- Local Government Act 1993.

In addition, regulations and planning instruments made under these Acts may also apply.

The *Protection of the Environment Operations Act* (POEO), 1997 commenced operation on 1st July 1999 and has repealed the following Acts:

- The Clean Waters Act 1970;
- The Clean Air Act 1961;
- The Noise Control Act 1975;
- The Environmental Offences and Penalties Act 1989, and;
- The Pollution Control Act 1970.

The Act also incorporates the major regulatory provisions of *the Waste Minimisation and Management Act* 1995.

The repealed Acts are incorporated into the POEO Act. Thus, regulations made under the repealed Acts are now regulations under the POEO Act or until otherwise amended and licences issued under the repealed Acts are deemed to be licences under the POEO Act. The POEO Act provides a common licence to cover emissions to all environmental media. The Act lists certain “scheduled activities” which have to be licensed.

The *Contaminated Land Management Act*, 1997 specifies the legal requirements for the registration, investigation and remediation of contaminated land, and for the registration and accreditation of site auditors. It repeals the requirements of the *Environmentally Hazardous Chemicals Act*, 1985 in relation to audits and the accreditation of site auditors.

The *Environmental Planning and Assessment Act*, 1989 gives local authorities the power to regulate development within their areas of responsibility and to impose specific consent conditions, which cover environmental issues. In addition, the *Local Government Act* 1993 requires approval from Council for certain works/activities to be obtained.

1.5 SCOPE OF WORK

The investigation and assessment was conducted using the following methods:

- Search and review of records and site plans available locally and from State Regulatory Authorities, including WorkCover, Department of Lands and NSW EPA;
- Review of historical aerial photographs available from the Land Information Centre and past Site reports;
- Reviewing all environmental conditions of the Site including the geology and hydrogeology;
- Providing a comprehensive overview of the Sites past and current land uses and potential contamination issues, and;
- Investigation of soil and groundwater chemical concentrations relative to the NEPM 2013 HIL's.

The assessment and report has been conducted in accordance with the following:

- The National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM), National Environment Protection Council 2013;
- NSW EPA Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2011;
- NSW EPA Contaminated Sites: Guidelines for the NSW Site Auditor Scheme, second edition 2006;
- NSW EPA Guidelines for Assessing Service Station Sites, 1994;

- The Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, Australian and New Zealand Environment and Conservation Council and the National Health and Medical Research Council (NHMRC), January 1992, and;
- NSW DECCW Waste Classification Guidelines, 2009.

2.0 SITE DESCRIPTION

2.1 Site Identification

The Site is located approximately fifteen kilometres (15km) west south-west of the Sydney CBD at 144 Boronia Road Greenacre, NSW, 2190 and is formally identified as Lot 4 DP 236854. The property is currently zoned Low Density Residential in accordance with the Bankstown Local Environmental Plan 2001 and is approximately 1,400m² (0.14Ha) in area.

The site currently consists of a single story fibro house located at the front of the property, with grassed yard north and east of the house. A paved driveway extends down the western side of the house, opening up to a fully concreted back yard. A carport type structure is located at the rear of the property with an enclosed room present on the eastern side of the structure. The carport structure was constructed of metal and compressed cement sheeting, with a hydraulic car lift and high pressure washing system installed.

Refer to **Figure 1** – Site Location and to **Figure 2** – Site Layout with Sampling Locations.

2.2 Proposed future Land use

The Site is proposed for continued residential land use, with the land to be redevelopment for residential properties in a town house type development.

2.3 Environmental Setting

2.3.1 Boundaries and Surrounding Land Use

Surrounding land use of the properties around the site consisted of low density residential developments including both single story and double story houses. An open space / park area is located south east of the property with an open water channel immediately south of the park area.

2.3.2 Site Topography and Hydrogeology

The *Phase 1 Environmental Site Assessment* produced by A.D. Envirotech Australia Pty Ltd in April 2013 identifies the Site to have an overall flat topographic gradient situated at an elevation of approximately 50m above sea level. Assessment of the site location indicates that the property is located on a hill, with the local topography sloping east, downhill. As the rear of the site is predominately covered by hard stand, it is expected that surface waters flow to the east, into onsite water drainage pits.

Review of local maps concluded that the closest natural water course is that of the Cooks River located approximately 3km west northwest of the site. An open channel is located within the open space at the rear of the property, which transports stormwater to Cooks River.

A search of the NSW National Resource Atlas identified sixteen (16) registered groundwater wells to be present within 2.0 km of the Site. Of the sixteen (16) wells, nine (9) wells are located up hydraulic gradient at the service station on the corner of Boronia Road and Hume Highway, with the remaining wells, spread out around the site.

All bores had minimal information available, with no information on water quality included. Refer to the summary table below for groundwater details.

Table 2a – Groundwater record Search

Name	Orientation from Site	Instillation Date	Standing Water Depth (mbgl)	Total Depth (m)	Current Bore Use
GW103519	~1.0km NNE	10.07.2000	--	3.50	Monitoring Bore
GW105393	~2km SE	25.07.2003	--	5.50	Domestic
GW107854	~1.5km SSE	23.04.2004	36.00	234.00	Domestic
GW109734	~0.2km W	03.11.2003	1.80	4.00	Monitoring Bore
GW109735	~0.2km W	04.12.2003	9.10	11.00	Monitoring Bore
GW111476	~1.0km E	14.04.2011	3.5	11.00	Monitoring Bore
GW111489	~0.2km W	07.02.2011	5.2	5.80	Monitoring Bore
GW111490	~0.2km W	07.02.2011	5.11	6.00	Monitoring Bore
GW111491	~0.2km W	07.02.2011	3.97	6.00	Monitoring Bore
GW112130	~0.2km W	28.01.2003	--	10.50	Monitoring Bore
GW112131	~0.2km W	28.01.2003	--	13.00	Monitoring Bore
GW112132	~0.2km W	02.04.2013	--	10.00	Monitoring Bore
GW112133	~0.2km W	29.01.2003	--	4.00	Monitoring Bore
GW112134	~0.2km W	29.01.2003	--	3.70	Monitoring Bore
GW112135	~0.2km W	28.11.2001	--	4.50	Monitoring Bore
GW112136	~0.2km W	30.10.2003	--	13.00	Monitoring Bore

During the investigation onsite, DLA did not encounter groundwater throughout the depth of the works undertaken.

Refer to **Appendix G** – Groundwater Bore Works Search

2.3.3 Site Geology and Soils

The A.D. Envirotech Australia Pty Ltd 2013 report stated that the site is located on a Blacktown Soil Landscape (gn) as indicated on the Sydney Soil Landscape Map, prepared by the Soil Conservation Services of NSW.

The topsoil occurs as a friable brownish-black loam to clay loam with moderately pedal sun-angular blocky structure and rough-faced porous ped fabric. The pH ranges from slightly acid (pH 5.5) to neutral (pH 7.0). Roots are common. A.D. Envirotech went on to identify that below the topsoil, a hard setting brown clay loam to silty clay loam with a pedal massive to weakly pedal structure and slowly porous earthy fabric is common.

A.D. Envirotech Australia Pty Ltd also stated that soils underlying the topsoil within the Blacktown Soil type generally occur as a brown light to medium clay with strongly pedal polyhedral or subangular and smooth-faced dense ped fabric. Soils located above the shale bedrock consists of a plastic light grey silty clay to heavy clay with moderately pedal polyhedral to sub-angular blocky structure and smooth-faced dense ped fabric.

Soils on the site are underlain by Wianamatta Group - Ashfield Shale consisting of laminate and dark grey siltstone and Bringelly Shale which consists of shale, with occasional calcareous claystone.

2.3.4 Acid Sulphate Soils

The Department of Natural Resources (DNR) Atlas does not identify Acid Sulphate Soils to be present in the area of the Site.

2.3.5 Site Meteorology

The Department of Meteorology NSW, gives the average annual rainfall for the Bankstown area at 868.5mm, with an annual daytime temperature range of 12.0°- 23.1° C, and an annual average of 82.7 days of rain.

2.4 Development Controls

2.4.1 The Bankstown City Council Section 149 Certificate

A Planning Certificate from Bankstown City Council under Section 149 of the Environmental Planning and Assessment Act, 1979 was obtained for the Site state:

- The land does not include or comprise critical habitat and is not located in a Conservation Area;
- No item of Environmental Heritage has not been identified on the land;
- The land is affected by road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993, and/or environmental planning instrument;
- No matters apply to this property under the Contaminated Land Management Act, 1997;
- The land has not been proclaimed to be within a mine subsidence district;
- The land is not included in Council identified bush fire prone lands;
- The land is not affected by a tree preservation order, and;
- The land does not contain an Aboriginal archaeological Site under protection of the National Parks and Wildlife Service Act, 1974.

Refer to **Appendix D** – Section 149 Planning Certificate

2.4.2 Work Cover Dangerous Goods Search

A WorkCover NSW search regarding the site identified as Lot 4 DP 236854, 144 Boronia Road Greenacre NSW, within their Stored Chemical Information Database (SCID), indicated that Dangerous Goods Licenses have been held for the premises in the past. The Dangerous Good Search identified one (1) 1,000L Underground Storage Tank (UST) to be present on the Site. The tank was installed on the 31st May 1956 for the storage of Mineral Spirits. A notice has been included in the WorkCover records identifying the licence was cancelled and the tank was to be abandoned.

An inspection of the site identified the location of the tank to be as described in the WorkCover licence documentation, positioned at the south eastern corner of the site, in front of the office building located at the eastern corner of the car port/awning structure. However the tank had been removed previously to the assessment, DLA are unsure of when this occurred or who removed the tank.

Refer to **Appendix E** – Dangerous Goods Search Licence Number.

2.4.3 Contaminated Land Record Search

A search was conducted of all records pertaining to section 58 of the Contaminated Land Management Act 1997 and revealed that the Site is not encumbered by any notices from the NSW OEH with regard to contaminated land. No sites in the vicinity of the site were encumbered by any notices.

2.5 Site History

2.5.1 Aerial Photograph Review

A.D Envirotech Australia Pty Ltd reviewed aerial photographs from 1943, 1982 and 2009 during the Preliminary Environmental Site Investigation. The findings of the A.D Envirotech review have been tabulated below:

Table 2b - Aerial Photograph Review for Lot 4 DP 236854

Aerial Photograph	Description
1943 Black & White	The site appears as vacant land to the south of Boronia Road and is covered by small trees or shrubs, the resolution of the image making it difficult to distinguish. The land directly adjacent to the site is vacant but the surrounding, broader area of the site appears to be under development. Residential properties are observed in small clusters and scattered throughout the surrounding area.
1982 Colour	The site is occupied by a residential building towards the north of the property. The centre of the site appears to be largely covered by a hard surface and there is a structure along the southern boundary of the site. The area surrounding the site is fully developed with residential houses.
2009 Colour	The site appears unchanged from the previous photograph. The surrounding area appears unchanged from the previous photograph.

2.5.2 Historical Title Search

As part of the Preliminary Site Environmental Assessment, A.D Envirotech Australia Pty Ltd also undertook the Historical Title Search for the property.

Lands Department records indicate that the property has been in private ownership from the earliest record in 1941 through to 1961, from which time the property was in the title of various companies until present.

Table 2c - Historical Title Summary for Lot 4 DP 236854

Date	Site Owner
Vol 5790 Fol 166	
20.02.1948	Ronald Martin Williamson, of Bankstown, Lift Labourer
17.07.1952	Rose Singer of East Bankstown, Married Woman
01.06.1953	Edward William Ault of Bankstown, Cartage Contractor
Vol 11204 Fol 226	
08.12.1969	Edward William Ault of Bankstown, Cartage Contractor
02.09.1971	John Graham Gapis of Greenacre, Carrier and Aileen Margaret Gapis, his wife as joint tenants
4 / 236854	
Circa 2000	George Steven Valiotis and Stamatia Voliotis as joint tenants

Refer to **Appendix F** – Historical Title Search

2.5.3 Heritage / Archaeological Items

A review of the 149 certificate identified that the land does not contain any Aboriginal archaeological Sites under protection of the National Parks and Wildlife Service Act, 1974. No items of heritage or archaeological significance were identified within the site during the Site inspection and fieldworks.

2.5.4 Site History Summary

Site history indicates that the site has remained relatively unchanged for most of the occupation of the site. The property appears to have been developed as a residential structure since clearing; with the title search indicating that the site has remained in private ownership since development. Minimal contamination has been identified to likely be present onsite.

2.6 Off-Site Observations

No current activities were apparent in the immediate surroundings of the site which may potentially cause contamination to the Site.

2.7 Potential Contamination Summary

Review of the historical information has indicated that minimal potential for site contamination is present, due to the historical residential landuse of the Site. Visual inspection of the site has identified that the site is covered by concrete in the rear of the property further limiting contamination potential of the soils. Review of the WorkCover search indicates the presence of a single tank onsite, with the site inspection confirming the previous location of the tank in the corner of the site.

The site inspection undertaken on site, supports the findings of the desktop investigation, concluding the likelihood of site contamination is minimal and restricted to the onsite UST. There is a potential that fill soils were used on site prior to placement of the hard stand concrete slabs to level the site, with the fill soils, if present, having the potential to contain concentrations of hydrocarbons, heavy metals, PAHs and pesticides at concentration exceeding the site criteria.

3.0 SITE INVESTIGATION PLAN

3.1 Field Investigation Procedure

Field investigations at Site were undertaken on the 11th October 2013 and comprised of the following:

- Inspect Site and conduct a review of Site history and aerial photographs to identify appropriate sampling locations prior to the commencement of work.
- The sampling program included natural soils and imported fill materials.
- Drilling of nine (9) investigation bore holes onsite.
- Collection of seventeen (17) primary soil samples with an additional collection of two (2) intra laboratory duplicate samples, and one (1) inter laboratory duplicate sample.
- Review of A.D Envirotech Australia Pty Ltd April 2013 Preliminary Environmental Site Investigation report for the site.

Refer to **Figure 2** – Site Layout with Sample Locations

3.1.1 Sampling Strategy

Field soil sampling comprised of the following:

- Identification of investigation locations prior to the commencement of work.
- The sampling program concentrated on fill soils with representative numbers of natural soils samples collected.
- Collection of soil samples, obtained by using a decontaminated trowel from auger holes drilled at the site.
- Where possible, sampling was conducted on a gradient from lowest to highest potential contamination to minimise cross contamination;

A systematic sampling strategy was employed in accordance with NSW EPA Sample Design Guidelines 1994, with additional stratified sampling implemented at locations determined to

required additional analysis that targeted identified areas of potential contamination. Representative samples of natural soils and potential fill material were collected.

3.1.2 Soil Collection

Samples were obtained by using a decontaminated stainless steel trowel from soils that had not come into contact with the drill rig auger. Hand augured samples were collected from a stainless steel bowl once removed from the decontaminated auger. The soil was placed into a non-preserved glass container with a Teflon lined threaded cap to be transported to the laboratory.

Soil samples for chemical analyses were collected in accordance with the NSW EPA Samples Guidelines 1994, NEPM 2013 and AS4482.1-2005.

All samples were collected by DLA Staff, who are competent occupational hygienists and environmental consultants who have been specifically trained in hazardous waste field investigation techniques and health and safety procedures. All techniques used are specified in DLA Environmental Field Manual for Contaminated Sites, which are based on methods specified by the United States Environment Protection Agency (US EPA), NSW WorkCover Authority and The National Environmental Protection (Assessment of Site Contamination) Amendment Measure (NEPM), 2013.

Refer to **Appendix C** – Quality Assurance and Quality Control

3.1.3 Groundwater Collection

No groundwater samples were collected during the site investigation works, as groundwater was not encountered during the investigation, at the maximum investigation depth of 3.0 metres below ground level.

3.1.4 Analytical Strategy

Samples were analysed for a range of contaminant indicators that may be associated with past and present land uses, i.e. imported fill material. Soil samples were analysed by Envirolab

Services Pty Ltd of Chatswood and Australian Safer Environment and Technology Pty Ltd (ASET) of Hornsby, Sydney for the following parameters:

Inorganic

- Heavy metals: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), and zinc (Zn).
- Asbestos.

Organic

- Total Recoverable Hydrocarbons (TRH).
- Monocyclic aromatic hydrocarbons (BTEX and Naphthalene).
- Volatile TRH (vTRH).
- Organochlorine Pesticides (OCP).
- Organophosphorus Pesticides (OPP).
- Polycyclic Aromatic Hydrocarbons (PAH).
- Polychlorinated Biphenyls (PCB).

No Photo Ionisation Detection (PID) assessments were undertaken as TRH analyses was performed on all samples collected. All samples were also analysed for eight (8) commonly analysed heavy metals and PAHs whilst sufficient analysis of other contaminants including OCs, OPs and PCBs, were undertaken to allow confident assessment of all representative areas of the Site.

Results of contaminant concentrations were assessed with reference to the relevant Health Investigation Levels (HIL's), prior to reporting and making recommendations.

Refer to **Appendix A** – Sample Log and NATA Certified Analytical Results

3.2 Soil Criteria

3.2.1 Rationale for the Selection of Assessment Criteria

No assessment of the site groundwater quality was undertaken, as groundwater was not encountered during the site investigation. Soil samples were collected from the base of the tank pit excavation suitably characterising potential contamination migration.

The criteria selected have been chosen in accordance with current Australian and NSW EPA guidelines. Australian Guidelines have been used in preference to international guidelines where available. These criteria are the most current and widely accepted guidelines in use at present in Australia, and have generally been developed using a risk-based approach. Therefore, the general selected guidelines provide a satisfactory framework for the site assessment.

3.2.2 Soil Criteria

Criteria for assessing the Site were derived from the following publications:

- *Schedule B1 Guideline on the Investigation Levels for Soil and Groundwater* from the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 Table 1A(1) Residential A – Residential with Garden / Accessible soil;
- NSW EPA Guidelines for *Assessing Service Station Sites* 1994;
- NSW EPA Guidelines for the NSW Site Auditor Scheme, second edition 2006, and;
- *HSLs for petroleum hydrocarbons in soil and groundwater, part 1: technical development document*, Technical report no. 10 for CRC for Contamination Assessment and Remediation of the Environment, 2011.

Table 3a – Site Criteria – Residential A: Residential with Garden / Accessible soil

Analytes	Thresholds (mg/kg dry wt)
Heavy Metals	
Arsenic	100
Cadmium	20
Chromium (VI)	100
Copper	6,000
Lead	300
Mercury	40
Nickel	400
Zinc	7,400
Polycyclic Aromatic Hydrocarbons (PAHs)	
BaP TEQ	3
Total PAHs	300
Polychlorinated Biphenyls (PCB's)	
PCB	1
Organochlorine Pesticides	
DDT+DDE+DDD	240
Aldrin + Dieldrin	6
Chlordane	50
Endosulfan	270
Endrin	10
Heptachlor	6
HCB	10
Methoxychlor	300
Chlorpyrifos	160
Asbestos (w/w)	
Bonded ACM [^]	0.01%
FA* and AF [#] (friable asbestos)	0.001%
All Asbestos	No visible asbestos at surface

[^] **Bonded ACM (bonded Asbestos)** - asbestos-containing-material which is in sound condition and where the asbestos is bound in a matrix such as cement or resin (e.g. asbestos fencing and vinyl tiles). Bonded ACM refers to, in this instance, material that cannot pass a 7 mm x 7 mm sieve.

* **Fibrous Asbestos** - friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This material is in a degraded condition such that it can be broken or crumbled by hand pressure.

[#] **Asbestos Fines** - AF includes free fibres, small fibre bundles and also small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

Table 3b – Site TRH Vapour Intrusion Criteria – Residential with Garden / Accessible soil

Analytes	TRH Criteria for Residential Properties in sandy soils			
	0m to <1m	1m to <2m	2m to <4m	4m +
Toluene	160	220	310	540
Ethylbenzene	55	NL	NL	NL
Xylene (total)	40	60	95	170
Naphthalene	3	NL	NL	NL
Benzene	0.5	0.5	0.5	0.5
F1 – C₆-C₁₀	45	70	110	200
F2 – C₁₀-C₁₆	110	240	440	NL
#F3 – C₁₆-C₃₄	--	--	--	--
#F4 – C₃₄-C₄₀	--	--	--	--

No vapour criteria has been provided due to the non-volatile nature of the hydrocarbons and are "therefore not of concern for vapour intrusion" (Schedule B1, Section 2.4.6 Petroleum hydrocarbon compounds and fraction, NEPM 2013)

NL – Not Limiting

Note: the sand profile / characterisation has been selected for the site despite the predominance of heavy clays onsite, as sandy fill was identified within the tank pit excavation, and is the most sensitive criteria available for Residential landuse.

Table 3c – Direct Contact criteria for Residential A Landuse

Chemical	Thresholds (mg/kg)
Toluene	14,000
Ethylbenzene	4,500
Xylenes	12,000
Naphthalene	1,400
Benzene	100
C₆ – C₁₀	4,400
>C₁₀ – C₁₆	3,300
>C₁₆ – C₃₄	4,500
>C₃₄ – C₄₀	6,300

3.2.3 Limitations of the Assessment Criteria

All criteria have limitations. Not all chemical analytes are covered by each set of guidelines, requiring some criteria to be sourced from elsewhere. Only criteria relevant to Australia have been used in the interpretation of analytical data on the Site.

4.0 RESULTS

4.1 Field observations

4.1.1 General

The Site consisted of grassed lawn on the northern and eastern sides of the house, with garden beds present long the grass perimeter. Paved driveway extended along the western boundary from the front driveway to the rear of the house to where concrete slabs continued from the rear of the house to under the car port structure at the rear of the property.

The tank pit was identified at the south eastern end of the site, on the north eastern corner of the rear shed structure. A depression was present, with no concrete covering an area of approximately 2x4 metres in size with sandy fill material present, no evidence of the tank was identified.

Excavations into the tank pit identified grey sandy fill, with some hydrocarbon odour noted approximately 1m bgl. Sandy fill continued to a depth of approximately 2.8m bgl, where natural heavy orange clay was observed. The remainder of the Site was characterised by approximately 0.2m of concrete underlay by between 0.15m and 0.2m of sandy fill, likely used as a levelling agent prior to pouring of concrete slabs. Natural brown silty clays and light brown clays were present under the sandy fill.

Use of the Site for vehicle storage and basic mechanism and washing is unlikely to have significantly impacted the site soils. Visual inspection of the works area only identified light staining of the concrete, indicating that insignificant quantities of potentially contaminating materials had been spilt, not likely to migrate through the concrete into underlying soils.

4.1.2 Off-Site Observations

No current activities were apparent in the immediate surroundings of the Site which may potentially cause contamination.

4.2 Soil Laboratory Results

All soils are analysed against the site criteria: NEPM 2013, Table 1A(1) Residential A – Residential with Garden / Accessible soil. The sampling regime involved the collection of representative surface samples and subsurface samples where possible.

A total of eighteen (18) soil samples were submitted to Envirolab Services Pty Ltd of Chatswood for a range of laboratory analyses, with samples also submitted to ASET of Hornsby for asbestos analysis.

Refer to **Appendix A** – Sample Log and NATA Certified Analytical Data and **Appendix B** – 95% UCL Data

Monocyclic Aromatic Hydrocarbons

A total of seventeen (17) samples were analysed for Monocyclic Aromatic Hydrocarbons which include Benzene, Toluene, Ethylbenzene, Xylenes (commonly referred to together as BTEX) and naphthalene, associated with petrol contamination. There were no concentrations of BTEX fractions recorded above the laboratory Limit of Reporting (LOR) and hence none above the assessment criteria.

Total Recoverable Hydrocarbons (TRH)

All seventeen (17) samples collected were analysed for Total Recoverable Hydrocarbon (TRH), both volatile and semi volatile. No detections of volatile TRH compounds (C₆-C₉) were detected above the LOR.

Of the sample collected, only three (3) samples recorded concentrations of TRH compounds in the semi volatile and non-volatile TRH fraction. Samples BH2-1.2, BH2-1.8 and BH5-0.2 recorded F2 and F3 TRH compounds, with only Sample BH2-1.8 recording of F4 TRH.

Due to the depth of the samples collected, both concentrations of F2 TRH in samples BH2-1.2 and BH5-0.2 were compliant with the Site TRH Vapour Intrusion Criteria for sands less than 1 metre below ground level of 110mg/kg at 93mg/kg and 67mg/kg respectfully. A concentration of 120mg/kg was recorded for the F2 TRH fraction in Sample BH2-1.8, however, as it was located between 1-2 metres below ground level, the recorded concentration was compliant with the site criteria for TRH in sand between 1-2m bgl of 240mg/kg.

The detections of F3 and F4 TRH compounds were recorded, however due to the non-volatile nature of the hydrocarbons, no Vapour Intrusion Criteria has been developed. No samples detected above the LOR exceeded the respective Direct Contact criteria for Residential with garden / accessible soils.

Refer to **Table 4a** below for detected concentrations of TRH compounds in samples.

Table 4a – Detected concentrations of TRH compounds (mg/kg)

Analytes	F1 C ₆ -C ₁₀	F2 C ₁₀ -C ₁₆	F3 C ₁₆ -C ₃₄	F4 C ₃₄ -C ₄₀
Samples 0 – < 1m bgl Criteria	45	110	--	--
BH2-1.2	nd	93	240	nd
BH5-0.2	nd	67	200	nd
Samples 1m – 2m bgl Criteria	70	240	--	--
BH2-1.8	nd	120	310	100

Polycyclic Aromatic Hydrocarbons (PAH)

All samples were analysed for PAH compounds. No samples detected concentrations of the Benzo(a)Pyrene Toxic Equivalence Quotient (BaP TEQ) with only six (6) samples recording concentrations of Total PAH. No samples exceeded the criteria of 300mg/kg Total PAH.

Refer to **Table 4b** below for detected concentrations of Total PAH compounds.

Table 4b – Detected concentrations of Total PAH and BaP TEQ (mg/kg)

Parameter	BaP TEQ	Total PAH
BH2-1.2	nd	0.76
BH2-1.8	nd	2.3
BH5-0.2	nd	2.5
BH5-0.5	nd	2.1
BH7-0.1	nd	0.05
BH9-0.2	nd	0.05
Criteria (mg/Kg)	3	300

nd = non detect, N/A = Not Applicable (insufficient data to generate a statistical value)

Pesticides and Polychlorinated Biphenyls (PCB)

Of the seventeen (17) samples collected, eight (8) were analysed for Organochlorine pesticides (OCP), Organophosphorus (OPP) and Polychlorinated Biphenyls (PCB). There were no concentrations of Organophosphorus pesticides or PCB recorded above the LOR. One (1) sample identified as BH7-0.1, recorded a detection of heptachlor epoxide at a concentration of 1.5mg/kg, however it is below the heptachlor site criteria of 6mg/kg, and hence not above the assessment criteria.

Heavy Metals

All soil samples were analysed for eight (8) heavy metals as recommended by the NSW EPA. All samples recorded detections of heavy metals; however the majority of the detections are indicative of natural background concentrations. No samples analysed exceeded the Site acceptance criteria for their relative analytes. Refer to **Table 4c** below for a statistical summary of the heavy metal concentrations recorded.

Table 4c –Heavy Metals Summary in Soils

<i>Parameter</i>	<i>Acid Extractable Metals</i>							
	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
Average (n= 17)	6.57	0.58	16.82	41.18	34.06	N/A	6.64	75.29
Standard Deviation	1.95	0.21	8.48	80.42	24.97	N/A	3.37	80.74
Minimum (mg/Kg)	4	0.4	5	9	10	nd	2	15
Maximum (mg/Kg)	10	1	32	340	79	0.04	15	320
Number HIL Exceedances	0	0	0	0	0	0	0	0
95% UCL	7.49	0.79	20.41	126.2	60.46	N/A	8.07	113
Criteria (mg/Kg)	100	20	100	6000	300	40	400	74000

nd = non detect, N/A = Not Applicable (insufficient data to generate a statistical value)

Soil Asbestos Analysis

A total of eight (8) soil samples were submitted for analysis of asbestos containing materials. No asbestos fragments were identified during the inspection, nor were any asbestos fines or fibres detected in the soil samples above the LOR.

4.3 QA/QC Comments

Laboratory QA/QC on all samples analysed included calculation of %RPD, matrix spike recovery and blank determinations. All %RPD, matrix spike recovery and blank determinations were within acceptable limits. The Field Quality Plan was followed throughout sampling and the RPD of duplicate samples were within the identified criteria. Therefore, it is considered that sampling techniques, transportation and the analytical data generated is of an acceptable degree of accuracy, representativeness, comparability, completeness and precision for the purpose of assessing the soil quality.

5.0 DISCUSSION

Field observations of the Site identified natural soils to generally be present on the site under the imported sand material used for the concrete slab construction. No areas of deep fill were identified outside the tank pit area.

The chemical analysis of site soils indicates that no contamination of the site was identified to be present in any natural soils onsite. Minor detections of PAHs and pesticides were recorded in some samples from fill materials; however concentrations recorded were well below the adopted criteria, and pose no significant risk to human health or the environment. One sample at BH5-0.2 recorded a TRH detection, however was significantly lower than the most sensitive TRH criteria of sand at less than 1m bgl.

The bore hole drilled into the tank pit area (BH2) confirmed the findings of the visual inspection, that the tank was not present and has been previously removed from site. Samples of the fill soils used to backfill the tank pit excavation were noted to be odorous with minor staining at the time of sampling. Results obtained from fill soils at a depth of between 1.0m and 2.0m bgl recorded concentrations of F2 hydrocarbons within the HIL Vapour Intrusion criteria for sand based soils located at between 1-2m bgl.

Hydrocarbon criteria is derived from a Vapour Intrusion potential, and as such, no vapour criteria is provide for F3 and F4 TRH fractions, as they are non-volatile and are not of concern for vapour intrusion. With the development of the TRH Vapour Intrusion criteria, the depth of soils below ground level are relative to the criteria adopted. Soils closer to the surface (0 -1m bgl) have a more sensitive criteria, than soils at depth (1-2m, 2-3m and >4m), reflecting the potential exposure capacities of the materials at depth.

Two (2) samples analysed from within the tank pit fill material between a depth of 1-2m bgl returned compliant concentrations of TRH against the Vapour Intrusion criteria for sands between 1-2m. If TRH compliant soils analysed from the depth between 1-2 metres are to be excavated and placed <1m below the surface of the site, remediation actions will be requires, however if remaining in place, soils are compliant with the site criteria.

BH2 drilling extended through the base of the tank pit into natural heavy orange clay soils, with laboratory analysis of the underlying soils not identifying any TRH compounds above the laboratory detection limit. No detections of TRH compounds immediately below the base of the tank excavation, indicates that no contamination has migrated down into natural soils, or into groundwater.

6.0 CONCLUSIONS

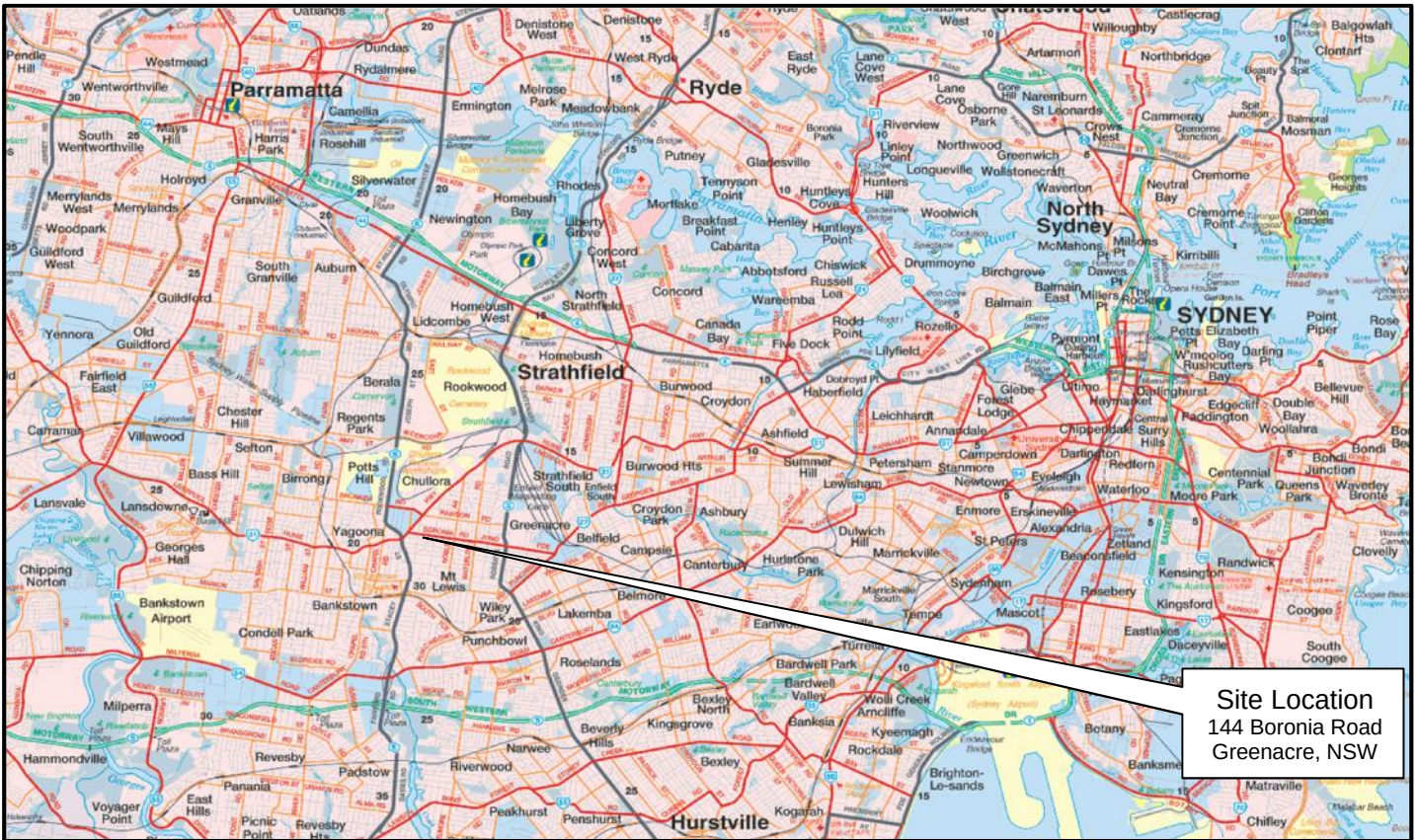
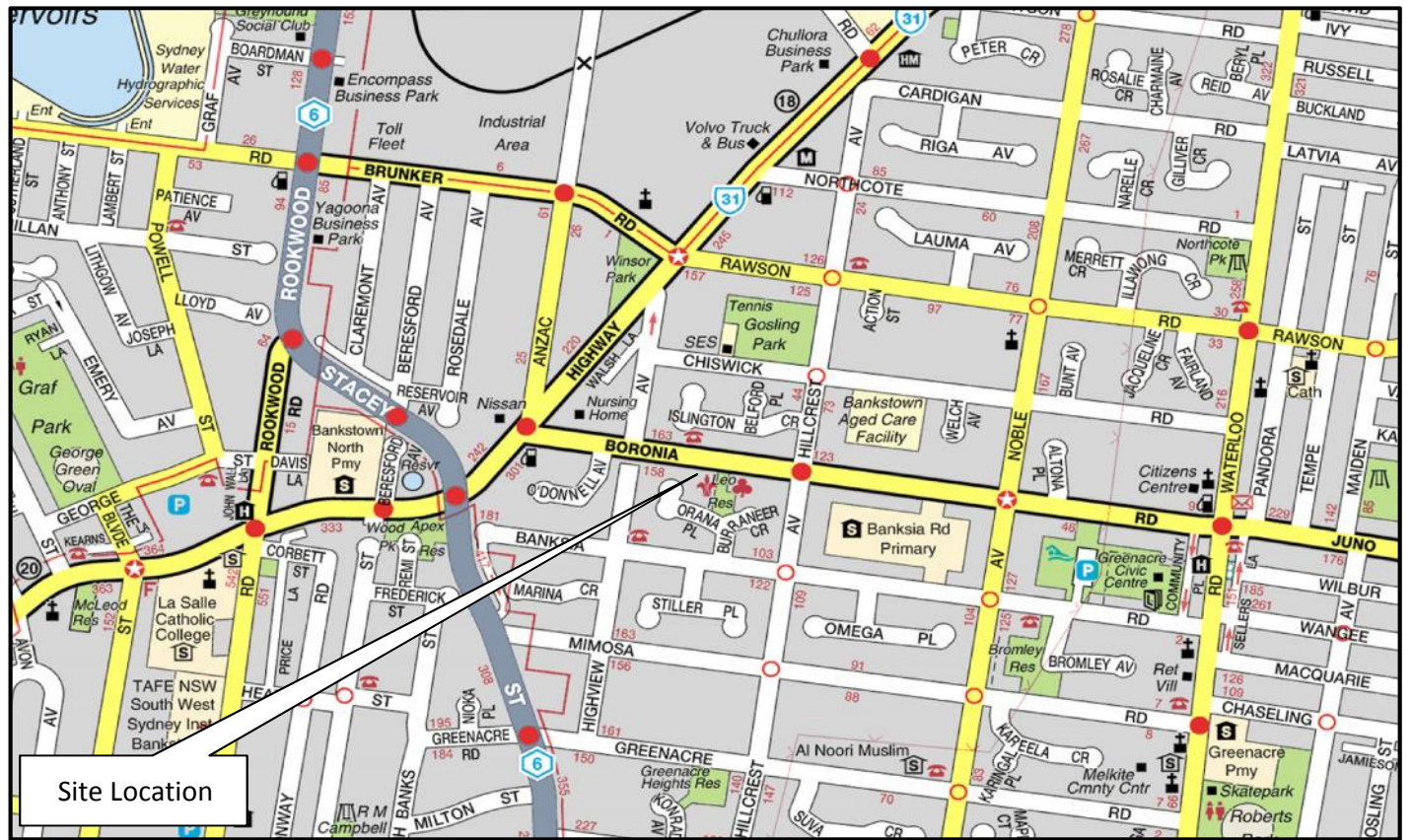
The sampling regime and subsequent assessment and reporting of the Site complied with the stated DQO's and is therefore generally considered to be adequate to determine the land use suitability of the Site.

No groundwater was encountered during the investigation of the site to a maximum depth of 3m bgl. No soil contamination identified in the base of the tank pit excavation and soils throughout the remainder of the site were analysed and found to be compliant with the adopted site criteria for residential landuse. Sandy fill soils were present within the tank pit, where the UST had been previously removed, with some TRH concentrations recorded to be present. Detections of TRH were compliant with the NEPM 2013 Vapour Intrusion criteria for soils at the depths that they were encountered.

The completion of this report concludes that the Site was deemed suitable for the proposed end land use as defined by the NEPM 2013 Residential A - Residential with Garden / Accessible soil landuse criteria. It should be noted that this investigation report does not guarantee that all soils at the Site are natural and identifies the presence of fill material at the site. However, visual inspection supported by chemical analysis of soil sampling, demonstrated that the residual soil in the study area meets the agreed criteria: NEPM (1999) Revised 2013 Table 1A(1) Residential A – Residential with Garden / Accessible soil.

Figure 1

Site Location



Unit 2b/30 Leighton Place
Hornsby, NSW 2077

DESIGNED:
DLA
COMPILED:
SS
PROJ. No.
DL3184

CLIENT:
LOCATION:

SITE LOCATION

George Valiotis

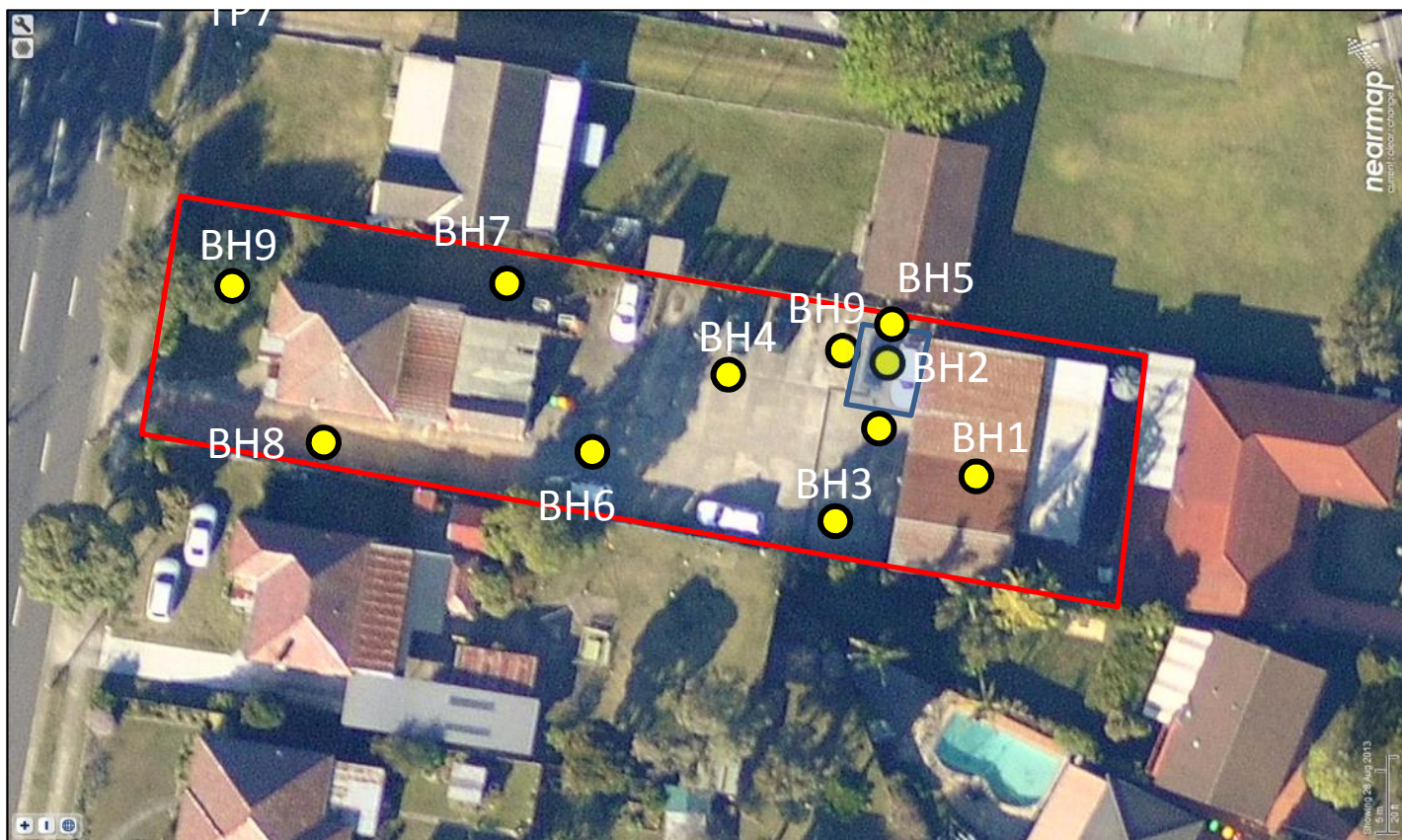
144 Boronia Road Greenacre, NSW

DRAWING:
20/11/2013

FIGURE:
1

Figure 2

Site Layout with Sample Locations



Legend

— Site Boundary

● Sample Location

▭ UST Pit



Sydney
Unit 2B/30 Leighton Place
Hornsby NSW 2077
Tel: 02-94761765
Fax: 02-94761557

Maitland
42B Church Street
Maitland NSW 2335
Tel: 02-49330001

Title:
Site Layout with Sampling Locations

Figure:
2

Project no.:
DL3189

Date:
13.11.2013

Revision:
1

Appendix A

Sample Log and NATA Certified Analytical Results

Table A2a - Asbestos & Petroleum Hydrocarbon Results

NEPM (1999) Amended 2013 Residential A - Residential Land Use Criteria; mg/Kg						Asbestos	0.5	160	55	40	3	C6-C10 45	>C10-C16 <1m - 110 1-2m - 240	>C16-C34 NL	>C34-C40 NL	3	300
Sample ID	Depth*	Date	Chemical Report	Asbestos Report	Soil Description		BTEX - <1m				Naph	TRH Sand				PAH	
							Benz	Toluen	EthylBe	Xylene		F1	F2	F3	F4	BaP TEQ	Total
BH1-0.3	0.3	11/10/2013	Envirolab 98826	ASET35557/ 38737	Silty Sandy Fill	nd	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH1-1.0	1.0	11/10/2013	Envirolab 98826	-	Natural Heavy Light Brown Clay	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH2-0.3	0.3	11/10/2013	Envirolab 98826	ASET35557/ 38737	Grey Silty Sandy Fill	nd	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH2-1.2	1.2	11/10/2013	Envirolab 98826	-	Grey Silty Sandy Fill	-	<0.2	<0.5	<1	<2	<1	<25	93	240	<100	nd	0.76
BH2-1.8	1.8	11/10/2013	Envirolab 98826	-	Grey Silty Sandy Fill	-	<0.2	<0.5	<1	<2	<1	<25	120	310	100	nd	2.3
BH2-3.0	3.0	11/10/2013	Envirolab 98826	-	Natural Heavy Light Brown Clay	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH4-0.4	0.4	11/10/2013	Envirolab 98826	ASET35557/ 38737	Black Grey Silty Sandy Fill	nd	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH4-0.6	0.6	11/10/2013	Envirolab 98826	-	Brown Clays	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH5-0.2	0.2	11/10/2013	Envirolab 98826	ASET35557/ 38737	Silty Sandy Fill	nd	<0.2	<0.5	<1	<2	<1	<25	67	200	<100	nd	2.5
BH5-0.5	0.5	11/10/2013	Envirolab 98826	-	Silty Sandy Fill	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	2.1
BH5-1.0	1.0	11/10/2013	Envirolab 98826	-	Natural Heavy Light Brown Clay	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH6-0.5	0.5	11/10/2013	Envirolab 98826	ASET35557/ 38737	Light Brown Sandy Fill	nd	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH7-0.1	0.1	11/10/2013	Envirolab 98826	ASET35557/ 38737	Silty Grey Topsoil	nd	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	0.05
BH7-0.3	0.3	11/10/2013	Envirolab 98826	-	Orange Brown Silty Clay	--	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH7-0.3a	0.3	11/10/2013	Envirolab 98826	-	Orange Brown Silty Clay	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH7-0.3b	0.3	11/10/2013	SGS-SE121423	-	Orange Brown Silty Clay	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH8-0.4	0.4	11/10/2013	Envirolab 98826	ASET35557/ 38737	Black Grey Silty Topsoil	nd	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH9-0.2	0.2	11/10/2013	Envirolab 98826	ASET35557/ 38737	Natural Heavy Light Brown Clay	nd	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	0.05
BH9-0.5	0.5	11/10/2013	Envirolab 98826	-	Natural Heavy Light Brown Clay	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
BH9-0.5a	0.5	11/10/2013	Envirolab 98826	-	Natural Heavy Light Brown Clay	-	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd
Avg						nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.3
Stdev						nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.1
95% UCL																	
Proc. B Min Sample Number						1	1	1	1	1	1	1	1	1	1	1	1

* Depth relates to Depth below surface level

-- Not Tested; nd: Not Detected above Laboratory LOR

BOLD = Detection above LOR**RED** = Exceeds HIL Criteria

Table A2b - Semi-Volatile Organics and Metals

NEPM (1999) Amended 2013 Residential A - Residential Land Use Criteria; mg/Kg				DDT+DDD+DDE- 240	Aldrin+Dieldrin-6	Chlordane-50	Endosulfan - 270	Endrin - 10	Heptachlor - 6	HCB - 10	Methoxychlor - 300		1	100	20	100	6,000	300	40	400	7,400
Sample ID	Depth*	Date	Chemical Report	Pesticides										Heavy Metals							
				OC								OP	PCB	As	Cd	Cr VI	Cu	Pb	Hg	Ni	Zn
BH1-0.3	0.3	11/10/2013	EnviroLab 98826	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	6	<0.4	16	11	19	<0.1	11	26
BH1-1.0	1.0	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	8	<0.4	18	15	15	<0.1	3	15
BH2-0.3	0.3	11/10/2013	EnviroLab 98826	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<4	<0.4	5	11	13	<0.1	2	75
BH2-1.2	1.2	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	4	0.5	7	22	61	<0.1	15	100
BH2-1.8	1.8	11/10/2013	EnviroLab 98826	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	4	0.6	11	28	79	<0.1	7	130
BH2-3.0	3.0	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	<4	<0.4	7	12	10	<0.1	5	32
BH4-0.4	0.4	11/10/2013	EnviroLab 98826	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	5	<0.4	25	13	28	<0.1	7	53
BH4-0.6	0.6	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	6	<0.4	24	18	18	<0.1	8	41
BH5-0.2	0.2	11/10/2013	EnviroLab 98826	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	5	1	9	110	77	<0.1	7	210
BH5-0.5	0.5	11/10/2013	EnviroLab 98826	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<4	<0.4	5	340	75	<0.1	7	320
BH5-1.0	1.0	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	7	0.4	13	17	20	<0.1	2	24
BH6-0.5	0.5	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	8	<0.4	23	20	17	<0.1	4	23
BH7-0.1	0.1	11/10/2013	EnviroLab 98826	nd	1.5	nd	nd	nd	nd	nd	nd	nd	nd	10	0.5	25	18	59	<0.1	7	95
BH7-0.3	0.3	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	7	<0.4	26	13	30	<0.1	7	47
BH7-0.3a	0.3	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	6	<0.4	23	15	30	<0.1	7	49
BH7-0.3b	0.3	11/10/2013	SGS-SE121423	-	-	-	-	-	-	-	-	-	-	5	<0.3	21	13	28	0.04	5.2	42
BH8-0.4	0.4	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	10	0.5	32	26	19	<0.1	11	43
BH9-0.2	0.2	11/10/2013	EnviroLab 98826	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	5	<0.4	18	9	23	<0.1	5	23
BH9-0.5	0.5	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	7	<0.4	22	17	16	<0.1	5	23
BH9-0.5a	0.5	11/10/2013	EnviroLab 98826	-	-	-	-	-	-	-	-	-	-	7	<0.4	24	16	17	<0.1	6	27
Avg				nd	1.5	nd	nd	nd	nd	nd	nd	nd	nd	6.5	0.6	17.7	37.2	32.7	0.0	6.6	69.9
Stdev				nd	N/A	nd	nd	nd	nd	nd	nd	nd	nd	1.8	0.2	8.1	74.4	23.3	N/A	3.1	75.3
95% UCL																					
Proc. B Min Sample Number				1	1	1	1	1	1	1	1	1	1	0.002	0.001	0.002	0.001	0.05	1	0.0004	0.001

* Depth relates to Depth below surface level

-- Not Tested; nd: Not Detected above Laboratory LOR

BOLD = Detection above LOR

RED = Exceeds HIL Criteria

CERTIFICATE OF ANALYSIS

98826

Client:

David Lane Associates

2B, 30 Leighton Pl

Hornsby

NSW 2077

Attention: Ed Milne, Simon

Sample log in details:

Your Reference:

DL3184, Greenacre

No. of samples:

23 Soils, 2 Waters

Date samples received / completed instructions received

11/10/13 / 11/10/13

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:

18/10/13 / 16/10/13

Date of Preliminary Report:

Not issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

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	UNITS	98826-1	98826-2	98826-3	98826-4	98826-5
Our Reference:	-----	BH1	BH1	BH2	BH2	BH2
Your Reference	-----	0.3	1.0	0.3	1.2	1.8
Depth						
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
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	%	101	96	96	91	90

vTRH(C6-C10)/BTEXN in Soil	UNITS	98826-6	98826-7	98826-8	98826-9	98826-10
Our Reference:	-----	BH2	BH4	BH4	BH5	BH5
Your Reference	-----	3.0	0.4	0.6	0.2	0.5
Depth						
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
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	%	98	92	98	93	92

vTRH(C6-C10)/BTEXN in Soil	UNITS	98826-11	98826-12	98826-13	98826-14	98826-15
Our Reference:	-----	BH5	BH6	BH7	BH7	BH7
Your Reference	-----	1.0	0.5	0.1	0.3	0.3
Depth		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Date Sampled		Soil	Soil	Soil	Soil	Soil
Type of sample						
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
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	%	91	99	96	95	95

vTRH(C6-C10)/BTEXN in Soil	UNITS	98826-16	98826-17	98826-18	98826-19
Our Reference:	-----	BH8	BH9	BH9	BH9
Your Reference	-----	0.4	0.2	0.5	0.5
Depth		11/10/2013	11/10/2013	11/10/2013	11/10/2013
Date Sampled		Soil	Soil	Soil	Soil
Type of sample					
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	100	94	91

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	98826-1	98826-2	98826-3	98826-4	98826-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH2
Depth	-----	0.3	1.0	0.3	1.2	1.8
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	84	94
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	130	200
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	160	190
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	93	120
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	93	120
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	240	310
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	100
Surrogate o-Terphenyl	%	103	107	107	108	122

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	98826-6	98826-7	98826-8	98826-9	98826-10
Your Reference	-----	BH2	BH4	BH4	BH5	BH5
Depth	-----	3.0	0.4	0.6	0.2	0.5
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	63	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	110	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	140	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	67	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	67	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	200	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	106	107	107	108	110

svTRH (C10-C40) in Soil	UNITS	98826-11	98826-12	98826-13	98826-14	98826-15
Our Reference:	-----	BH5	BH6	BH7	BH7	BH7
Your Reference	-----	1.0	0.5	0.1	0.3	0.3
Depth		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Date Sampled		Soil	Soil	Soil	Soil	Soil
Type of sample						
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	106	107	103	101	103

svTRH (C10-C40) in Soil	UNITS	98826-16	98826-17	98826-18	98826-19
Our Reference:	-----	BH8	BH9	BH9	BH9
Your Reference	-----	0.4	0.2	0.5	0.5
Depth		11/10/2013	11/10/2013	11/10/2013	11/10/2013
Date Sampled		Soil	Soil	Soil	Soil
Type of sample					
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	104	104	106	100

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	98826-1 BH1 0.3 11/10/2013 Soil	98826-2 BH1 1.0 11/10/2013 Soil	98826-3 BH2 0.3 11/10/2013 Soil	98826-4 BH2 1.2 11/10/2013 Soil	98826-5 BH2 1.8 11/10/2013 Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.2	0.3
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1	0.3
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.2	0.4
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	0.4
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.08	0.15
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	0.76	2.3
Surrogate p-Terphenyl-d14	%	89	115	101	96	99

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	98826-6 BH2 3.0 11/10/2013 Soil	98826-7 BH4 0.4 11/10/2013 Soil	98826-8 BH4 0.6 11/10/2013 Soil	98826-9 BH5 0.2 11/10/2013 Soil	98826-10 BH5 0.5 11/10/2013 Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.6	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.3	0.3
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.3	0.4
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.3	0.3
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.3	0.3
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.17	0.16
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1	0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	2.5	2.1
Surrogate p-Terphenyl-d14	%	101	99	101	101	99

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	98826-11 BH5 1.0 11/10/2013 Soil	98826-12 BH6 0.5 11/10/2013 Soil	98826-13 BH7 0.1 11/10/2013 Soil	98826-14 BH7 0.3 11/10/2013 Soil	98826-15 BH7 0.3 11/10/2013 Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	NIL (+)VE	0.05	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	104	101	102	99	103

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	98826-16 BH8 0.4 11/10/2013 Soil	98826-17 BH9 0.2 11/10/2013 Soil	98826-18 BH9 0.5 11/10/2013 Soil	98826-19 BH9 0.5 11/10/2013 Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	0.05	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	100	103	102	101

Organochlorine Pesticides in soil						
Our Reference:	UNITS	98826-1	98826-3	98826-5	98826-7	98826-9
Your Reference	-----	BH1	BH2	BH2	BH4	BH5
Depth	-----	0.3	0.3	1.8	0.4	0.2
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
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	%	99	100	101	104	100

Organochlorine Pesticides in soil				
Our Reference:	UNITS	98826-10	98826-13	98826-17
Your Reference	-----	BH5	BH7	BH9
Depth	-----	0.5	0.1	0.2
Date Sampled		11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	1.5	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	105	103	101

Organophosphorus Pesticides						
Our Reference:	UNITS	98826-1	98826-3	98826-5	98826-7	98826-9
Your Reference	-----	BH1	BH2	BH2	BH4	BH5
Depth	-----	0.3	0.3	1.8	0.4	0.2
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	100	101	104	100

Organophosphorus Pesticides				
Our Reference:	UNITS	98826-10	98826-13	98826-17
Your Reference	-----	BH5	BH7	BH9
Depth	-----	0.5	0.1	0.2
Date Sampled		11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	105	103	101

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	98826-1 BH1 0.3 11/10/2013 Soil	98826-3 BH2 0.3 11/10/2013 Soil	98826-5 BH2 1.8 11/10/2013 Soil	98826-7 BH4 0.4 11/10/2013 Soil	98826-9 BH5 0.2 11/10/2013 Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	99	100	101	104	100

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	98826-10 BH5 0.5 11/10/2013 Soil	98826-13 BH7 0.1 11/10/2013 Soil	98826-17 BH9 0.2 11/10/2013 Soil
Date extracted	-	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	14/10/2013	14/10/2013	14/10/2013
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	105	103	101

Acid Extractable metals in soil						
Our Reference:	UNITS	98826-1	98826-2	98826-3	98826-4	98826-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH2
Depth	-----	0.3	1.0	0.3	1.2	1.8
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Arsenic	mg/kg	6	8	<4	4	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.5	0.6
Chromium	mg/kg	16	18	5	7	11
Copper	mg/kg	11	15	11	22	28
Lead	mg/kg	19	15	13	61	79
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	3	2	15	7
Zinc	mg/kg	26	15	75	100	130

Acid Extractable metals in soil						
Our Reference:	UNITS	98826-6	98826-7	98826-8	98826-9	98826-10
Your Reference	-----	BH2	BH4	BH4	BH5	BH5
Depth	-----	3.0	0.4	0.6	0.2	0.5
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Arsenic	mg/kg	<4	5	6	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	1	<0.4
Chromium	mg/kg	7	25	24	9	5
Copper	mg/kg	12	13	18	110	340
Lead	mg/kg	10	28	18	77	75
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	7	8	7	7
Zinc	mg/kg	32	53	41	210	320

Acid Extractable metals in soil						
Our Reference:	UNITS	98826-11	98826-12	98826-13	98826-14	98826-15
Your Reference	-----	BH5	BH6	BH7	BH7	BH7
Depth	-----	1.0	0.5	0.1	0.3	0.3
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Arsenic	mg/kg	7	8	10	7	6
Cadmium	mg/kg	0.4	<0.4	0.5	<0.4	<0.4
Chromium	mg/kg	13	23	25	26	23
Copper	mg/kg	17	20	18	13	15
Lead	mg/kg	20	17	59	30	30
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	4	7	7	7
Zinc	mg/kg	24	23	95	47	49

Acid Extractable metals in soil					
Our Reference:	UNITS	98826-16	98826-17	98826-18	98826-19
Your Reference	-----	BH8	BH9	BH9	BH9
Depth	-----	0.4	0.2	0.5	0.5
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Arsenic	mg/kg	10	5	7	7
Cadmium	mg/kg	0.5	<0.4	<0.4	<0.4
Chromium	mg/kg	32	18	22	24
Copper	mg/kg	26	9	17	16
Lead	mg/kg	19	23	16	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	5	5	6
Zinc	mg/kg	43	23	23	27

Moisture						
Our Reference:	UNITS	98826-1	98826-2	98826-3	98826-4	98826-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH2
Depth	-----	0.3	1.0	0.3	1.2	1.8
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Moisture	%	16	19	19	19	22

Moisture						
Our Reference:	UNITS	98826-6	98826-7	98826-8	98826-9	98826-10
Your Reference	-----	BH2	BH4	BH4	BH5	BH5
Depth	-----	3.0	0.4	0.6	0.2	0.5
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Moisture	%	20	17	21	21	15

Moisture						
Our Reference:	UNITS	98826-11	98826-12	98826-13	98826-14	98826-15
Your Reference	-----	BH5	BH6	BH7	BH7	BH7
Depth	-----	1.0	0.5	0.1	0.3	0.3
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Moisture	%	20	24	15	12	13

Moisture					
Our Reference:	UNITS	98826-16	98826-17	98826-18	98826-19
Your Reference	-----	BH8	BH9	BH9	BH9
Depth	-----	0.4	0.2	0.5	0.5
Date Sampled		11/10/2013	11/10/2013	11/10/2013	11/10/2013
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	14/10/2013	14/10/2013	14/10/2013	14/10/2013
Date analysed	-	15/10/2013	15/10/2013	15/10/2013	15/10/2013
Moisture	%	21	9.0	19	14

BTEX in Water			
Our Reference:	UNITS	98826-20	98826-21
Your Reference	-----	TS	TB
Depth	-----	-	-
Date Sampled		11/10/2013	11/10/2013
Type of sample		Water	Water
Date extracted	-	12/10/2013	12/10/2013
Date analysed	-	12/10/2013	12/10/2013
Benzene	µg/L	102%	<1
Toluene	µg/L	105%	<1
Ethylbenzene	µg/L	106%	<1
m+p-xylene	µg/L	108%	<2
o-xylene	µg/L	126%	<1
Surrogate Dibromofluoromethane	%	98	100
Surrogate toluene-d8	%	93	91
Surrogate 4-BFB	%	97	95

Method ID	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)-BTX 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. 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.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	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.

Client Reference: DL3184, Greenacre

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	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Date analysed	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	98826-1	<25 <25	LCS-4	100%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	98826-1	<25 <25	LCS-4	100%
Benzene	mg/kg	0.2	Org-016	<0.2	98826-1	<0.2 <0.2	LCS-4	91%
Toluene	mg/kg	0.5	Org-016	<0.5	98826-1	<0.5 <0.5	LCS-4	108%
Ethylbenzene	mg/kg	1	Org-016	<1	98826-1	<1 <1	LCS-4	95%
m+p-xylene	mg/kg	2	Org-016	<2	98826-1	<2 <2	LCS-4	102%
o-Xylene	mg/kg	1	Org-016	<1	98826-1	<1 <1	LCS-4	99%
naphthalene	mg/kg	1	Org-014	<1	98826-1	<1 <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	108	98826-1	101 103 RPD: 2	LCS-4	95%
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	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Date analysed	-			15/10/2013	98826-1	15/10/2013 15/10/2013	LCS-4	15/10/2013
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	98826-1	<50 <50	LCS-4	131%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	98826-1	<100 <100	LCS-4	123%
TRHC ₂₈ - C ₃₆	mg/kg	100	Org-003	<100	98826-1	<100 <100	LCS-4	89%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	98826-1	<50 <50	LCS-4	131%
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	98826-1	<100 <100	LCS-4	123%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	98826-1	<100 <100	LCS-4	89%
Surrogate o-Terphenyl	%		Org-003	108	98826-1	103 102 RPD: 1	LCS-4	111%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Date analysed	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	LCS-4	103%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	LCS-4	96%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	LCS-4	98%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	LCS-4	96%

Client Reference: DL3184, Greenacre

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	98826-1	<0.1 <0.1	LCS-4	99%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	LCS-4	97%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	98826-1	<0.2 <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	98826-1	<0.05 <0.05	LCS-4	97%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	99	98826-1	89 87 RPD: 2	LCS-4	95%
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	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Date analysed	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
HCB	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	107%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	101%
Heptachlor	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	126%
delta-BHC	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	110%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	107%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	113%
Dieldrin	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	111%
Endrin	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	106%
pp-DDD	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	119%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	LCS-4	130%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	91	98826-1	99 96 RPD: 3	LCS-4	100%

Client Reference: DL3184, Greenacre

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organophosphorus Pesticides						Base II Duplicate II %RPD		
Date extracted	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Date analysed	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Diazinon	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	LCS-4	95%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	LCS-4	135%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	98826-1	<0.1 <0.1	LCS-4	113%
Surrogate TCMX	%		Org-008	91	98826-1	99 96 RPD: 3	LCS-4	100%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Date analysed	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-4	14/10/2013
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	98826-1	<0.1 <0.1	LCS-4	108%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	98826-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	91	98826-1	99 96 RPD: 3	LCS-4	88%
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	-			14/10/2013	98826-1	14/10/2013 14/10/2013	LCS-1	14/10/2013
Date analysed	-			14/10/2013	98826-1	15/10/2013 15/10/2013	LCS-1	14/10/2013
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	98826-1	6 6 RPD: 0	LCS-1	96%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	98826-1	<0.4 <0.4	LCS-1	101%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	98826-1	16 21 RPD: 27	LCS-1	98%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	98826-1	11 12 RPD: 9	LCS-1	96%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	98826-1	19 17 RPD: 11	LCS-1	97%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	98826-1	<0.1 <0.1	LCS-1	81%

Client Reference: DL3184, Greenacre

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	98826-1	11 8 RPD: 32	LCS-1	98%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	98826-1	26 27 RPD: 4	LCS-1	100%
QUALITY CONTROL Moisture								
Date prepared	-			[NT]				
Date analysed	-			[NT]				
Moisture	%	0.1	Inorg-008	[NT]				
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
BTEX in Water						Base II Duplicate II %RPD		
Date extracted	-			12/10/2013	[NT]	[NT]	LCS-W1	12/10/2013
Date analysed	-			12/10/2013	[NT]	[NT]	LCS-W1	12/10/2013
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	97%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	100%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	98%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	101%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	102%
Surrogate Dibromofluoromethane	%		Org-016	71	[NT]	[NT]	LCS-W1	102%
Surrogate toluene-d8	%		Org-016	78	[NT]	[NT]	LCS-W1	93%
Surrogate 4-BFB	%		Org-016	94	[NT]	[NT]	LCS-W1	97%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#		Duplicate Base + Duplicate + %RPD		Spike Sm#	Spike % Recovery	
Date extracted	-	98826-11		14/10/2013 14/10/2013		98826-3	14/10/2013	
Date analysed	-	98826-11		14/10/2013 14/10/2013		98826-3	14/10/2013	
TRHC ₆ - C ₉	mg/kg	98826-11		<25 <25		98826-3	95%	
TRHC ₆ - C ₁₀	mg/kg	98826-11		<25 <25		98826-3	95%	
Benzene	mg/kg	98826-11		<0.2 <0.2		98826-3	97%	
Toluene	mg/kg	98826-11		<0.5 <0.5		98826-3	97%	
Ethylbenzene	mg/kg	98826-11		<1 <1		98826-3	90%	
m+p-xylene	mg/kg	98826-11		<2 <2		98826-3	96%	
o-Xylene	mg/kg	98826-11		<1 <1		98826-3	93%	
naphthalene	mg/kg	98826-11		<1 <1		[NR]	[NR]	
Surrogate aaa-Trifluorotoluene	%	98826-11		91 95 RPD: 4		98826-3	97%	

Client Reference: DL3184, Greenacre

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98826-11	14/10/2013 14/10/2013	98826-3	14/10/2013
Date analysed	-	98826-11	15/10/2013 15/10/2013	98826-3	15/10/2013
TRHC ₁₀ - C ₁₄	mg/kg	98826-11	<50 <50	98826-3	131%
TRHC ₁₅ - C ₂₈	mg/kg	98826-11	<100 <100	98826-3	#
TRHC ₂₉ - C ₃₆	mg/kg	98826-11	<100 <100	98826-3	98%
TRH>C ₁₀ -C ₁₆	mg/kg	98826-11	<50 <50	98826-3	131%
TRH>C ₁₆ -C ₃₄	mg/kg	98826-11	<100 <100	98826-3	#
TRH>C ₃₄ -C ₄₀	mg/kg	98826-11	<100 <100	98826-3	98%
Surrogate o-Terphenyl	%	98826-11	106 108 RPD: 2	98826-3	111%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98826-11	14/10/2013 14/10/2013	98826-3	14/10/2013
Date analysed	-	98826-11	14/10/2013 14/10/2013	98826-3	14/10/2013
Naphthalene	mg/kg	98826-11	<0.1 <0.1	98826-3	104%
Acenaphthylene	mg/kg	98826-11	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	98826-11	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	98826-11	<0.1 <0.1	98826-3	97%
Phenanthrene	mg/kg	98826-11	<0.1 <0.1	98826-3	101%
Anthracene	mg/kg	98826-11	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	98826-11	<0.1 <0.1	98826-3	101%
Pyrene	mg/kg	98826-11	<0.1 <0.1	98826-3	105%
Benzo(a)anthracene	mg/kg	98826-11	<0.1 <0.1	[NR]	[NR]
Chrysene	mg/kg	98826-11	<0.1 <0.1	98826-3	99%
Benzo(b+k)fluoranthene	mg/kg	98826-11	<0.2 <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	98826-11	<0.05 <0.05	98826-3	98%
Indeno(1,2,3-c,d)pyrene	mg/kg	98826-11	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	98826-11	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	98826-11	<0.1 <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	98826-11	104 107 RPD: 3	98826-3	94%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	98826-3	14/10/2013
Date analysed	-	[NT]	[NT]	98826-3	14/10/2013
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	98826-3	107%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	98826-3	115%
Heptachlor	mg/kg	[NT]	[NT]	98826-3	126%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	98826-3	109%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	98826-3	110%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	98826-3	103%
Dieldrin	mg/kg	[NT]	[NT]	98826-3	128%
Endrin	mg/kg	[NT]	[NT]	98826-3	101%
pp-DDD	mg/kg	[NT]	[NT]	98826-3	121%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	98826-3	111%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	98826-3	95%

Client Reference: DL3184, Greenacre

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	98826-3	14/10/2013
Date analysed	-	[NT]	[NT]	98826-3	14/10/2013
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	mg/kg	[NT]	[NT]	98826-3	95%
Fenitrothion	mg/kg	[NT]	[NT]	98826-3	137%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	98826-3	118%
Surrogate TCMX	%	[NT]	[NT]	98826-3	96%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	98826-3	14/10/2013
Date analysed	-	[NT]	[NT]	98826-3	14/10/2013
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	98826-3	111%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	98826-3	87%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	98826-11	14/10/2013 14/10/2013	LCS-2	14/10/2013
Date analysed	-	98826-11	15/10/2013 15/10/2013	LCS-2	14/10/2013
Arsenic	mg/kg	98826-11	7 10 RPD: 35	LCS-2	103%
Cadmium	mg/kg	98826-11	0.4 0.4 RPD: 0	LCS-2	108%
Chromium	mg/kg	98826-11	13 20 RPD: 42	LCS-2	107%
Copper	mg/kg	98826-11	17 18 RPD: 6	LCS-2	104%
Lead	mg/kg	98826-11	20 20 RPD: 0	LCS-2	105%
Mercury	mg/kg	98826-11	<0.1 <0.1	LCS-2	82%
Nickel	mg/kg	98826-11	2 2 RPD: 0	LCS-2	106%
Zinc	mg/kg	98826-11	24 21 RPD: 13	LCS-2	108%

Client Reference: DL3184, Greenacre

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	98826-3	14/10/2013
Date analysed	-	[NT]	[NT]	98826-3	14/10/2013
Arsenic	mg/kg	[NT]	[NT]	98826-3	105%
Cadmium	mg/kg	[NT]	[NT]	98826-3	111%
Chromium	mg/kg	[NT]	[NT]	98826-3	106%
Copper	mg/kg	[NT]	[NT]	98826-3	117%
Lead	mg/kg	[NT]	[NT]	98826-3	115%
Mercury	mg/kg	[NT]	[NT]	98826-3	81%
Nickel	mg/kg	[NT]	[NT]	98826-3	108%
Zinc	mg/kg	[NT]	[NT]	98826-3	##

Report Comments:

Total Recoverable Hydrocarbons in soil:(NEPM) # Percent recovery is not possible to report due to interference from analytes (other than those being tested) in the sample/s.

METALS_S: ## Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

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	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	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 and 10-140% for SVOC 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.



CHAIN OF CUSTODY - Client

20399

ENVIROLAB GROUP - National phone number 1300 42 43 44

SYDNEY LAB - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

PERTH LAB - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

MELBOURNE LAB - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

BRISBANE OFFICE - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

ADELAIDE OFFICE - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 08 8369 0722 / 0406 350 706
adelaide@envirolab.com.au

Client:	DLA	Client Project Name / Number / Site (ie report title):	DL3184 - GREENACRE
Contact Person:	ED / SIMON	PO No.:	
Project Manager:		Envirolab Quote No.:	
Implementer:		Date results required: ____/____/____	
Address:		Or choose: ☒ standard ☐ same day / 1 day / 2 day / 3 day	
		Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Phone:	9476 1765	Report format: esdat / equis /	
Email:	dl@environmental.bigpond.com	Lab Comments:	
Mobile:	0407 823 075		

Sample Information

Tests Required

Comments

Envirolab Sample ID	Client Sample ID or information	Depth	Date Sampled	Type of Sample	Conto 5	Conto 6													Provide as much information about the sample as you can
1	BH1 - 0.3	0.3	11/10	Soil		X													
2	BH1 - 1.0	1.0			X														
3	BH2 - 0.3	0.3				X													
4	BH2 - 1.2	1.2			X														
5	BH2 - 1.8	1.8				X													
6	BH2 - 3.0	3.0			X														
7	BH4 - 0.4	0.4				X													
8	BH4 - 0.6	0.6			X														
9	BH4 - 1.0	1.0																	
10	BH5 - 0.2	0.2				X													
11	BH5 - 0.5	0.5				X													
12	BH5 - 1.0	1.0			X														
13	BH6 - 0.3	0.3				X													

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 98826
Date Received: 11/10/13
Time Received: 15:30
Received by: JYH
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company):	DLA	Received by (Company):	ELS	Lab use only:
Print Name:	Rowan Milne	Print Name:	JYH	Samples Received: Cool / Ambient (circle one)
Date & Time:	11/10/13	Date & Time:	11/10/13 15:30	Temperature Received at: 9.8 (if applicable)
Signature:		Signature:		Transported by: Hand delivered / courier (circle one)



CHAIN OF CUSTODY - Client

20400

ENVIROLAB GROUP - National phone number 1300 42 43 44

SYDNEY LAB - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

PERTH LAB - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

MELBOURNE LAB - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

BRISBANE OFFICE - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

ADELAIDE OFFICE - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 08 8369 0722 / 0406 350 706
adelaide@envirolab.com.au

Client:	DLA	Client Project Name / Number / Site (ie report title):	DL3184 - Greenwates
Contact Person:	ED / SIMON	PO No.:	
Project Manager:		Envirolab Quote No.:	
Sampler:		Date results required: ____/____/____	
Address:		Or choose: ☒ standard ☐ same day / 1 day / 2 day / 3 day	
Phone: 9476 765	Mobile:	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email: dlaenvironmental@bigpond.com		Report format: esdat / equis /	
		Lab Comments:	

Sample Information

Tests Required

Comments

Envirolab Sample ID	Client Sample ID or information	Depth	Date Sampled	Type of Sample	Card 1	Card 2														Provide as much information about the sample as you can
98826																				
12	BH6-0.5	0.5	11/10	Soil	X															
13	BH7-0.1	0.1				X														
14	BH7-0.3	0.3			X															
15	BH7-0.3a	0.3			X															
24	BH7-0.4	0.4																		
25	BH8-0.2	0.2				X														
16	BH8-0.4	0.4			X															
17	BH9-0.2	0.2				X														
18	BH9-0.5	0.5	✓	✓	X															
19	BH9-0.5a	0.5	✓	✓	X															
20, 21	TS/TO																			

Relinquished by (Company): DLA

Received by (Company): ELS

Lab use only:

Print Name: Edward Murr

Print Name: JYH

Samples Received: Cool / Ambient (circle one)

Date & Time: 11/10/13

Date & Time: 11/10/13 15:30

Temperature Received at: 9.8 (if applicable)

Signature: [Signature]

Signature: [Signature]

Transported by: Hand delivered / courier (circle one)

CLIENT DETAILS

Contact **Ed Milne**
 Client **David Lane Associates**
 Address **Unit 2B, 30 Leighton Place
 HORNSBY
 NSW 2077**

Telephone **02 9476 1765**
 Facsimile **02 9476 1557**
 Email **dlaenvironmental@bigpond.com**

Project **DL3184 - Greenacre**
 Order Number **(Not specified)**
 Samples **1**

LABORATORY DETAILS

Manager **Huong Crawford**
 Laboratory **SGS Alexandria Environmental**
 Address **Unit 16, 33 Maddox St
 Alexandria NSW 2015**

Telephone **+61 2 8594 0400**
 Facsimile **+61 2 8594 0499**
 Email **au.environmental.sydney@sgs.com**

SGS Reference **SE121423 R0**
 Report Number **0000067574**
 Date Reported **18 Oct 2013**
 Date Received **11 Oct 2013**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

SIGNATORIES



Andy Sutton
Senior Organic Chemist



Dong Liang
Metals/Inorganics Team Leader



Huong Crawford
Production Manager



Ly Kim Ha
Organic Section Head

		Sample Number	SE121423.001
		Sample Matrix	Soil
		Sample Date	11 Oct 2013
		Sample Name	BH7 - 0.36
Parameter	Units	LOR	

VOC's in Soil Method: AN433/AN434

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1
-------------	-------	-----	------

Surrogates

Dibromofluoromethane (Surrogate)	%	-	70
d4-1,2-dichloroethane (Surrogate)	%	-	79
d8-toluene (Surrogate)	%	-	91
Bromofluorobenzene (Surrogate)	%	-	105

Totals

Total Xylenes*	mg/kg	0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25
TRH C6-C9	mg/kg	20	<20

Surrogates

Dibromofluoromethane (Surrogate)	%	-	70
d4-1,2-dichloroethane (Surrogate)	%	-	79
d8-toluene (Surrogate)	%	-	91
Bromofluorobenzene (Surrogate)	%	-	105

VPF F Bands

Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

		Sample Number	SE121423.001
		Sample Matrix	Soil
		Sample Date	11 Oct 2013
		Sample Name	BH7 - 0.36
Parameter	Units	LOR	

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	45	<45
TRH C29-C36	mg/kg	45	<45
TRH C37-C40	mg/kg	100	<100
TRH C10-C36 Total	mg/kg	110	<110
TRH C10-C40 Total	mg/kg	210	<210

TRH F Bands

TRH >C10-C16 (F2)	mg/kg	25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1
Fluorene	mg/kg	0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1
Anthracene	mg/kg	0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1
Pyrene	mg/kg	0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1
Chrysene	mg/kg	0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1
Total PAH	mg/kg	0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2

		Sample Number	SE121423.001
		Sample Matrix	Soil
		Sample Date	11 Oct 2013
		Sample Name	BH7 - 0.36
Parameter	Units	LOR	

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

Surrogates

d5-nitrobenzene (Surrogate)	%	-	100
2-fluorobiphenyl (Surrogate)	%	-	102
d14-p-terphenyl (Surrogate)	%	-	90

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	5
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.3	21
Copper, Cu	mg/kg	0.5	13
Lead, Pb	mg/kg	1	28
Nickel, Ni	mg/kg	0.5	5.2
Zinc, Zn	mg/kg	0.5	42

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.04
---------	-------	------	------

Moisture Content Method: AN002

% Moisture	%	0.5	12
------------	---	-----	----

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

Mercury in Soil Method: ME-(AU)-[ENV]AN312

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB046347	mg/kg	0.01	<0.01	18 - 22%	108%	94%

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB046270	mg/kg	0.1	<0.1	0%	96%	92%
2-methylnaphthalene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB046270	mg/kg	0.1	<0.1	0%	102%	99%
Acenaphthene	LB046270	mg/kg	0.1	<0.1	0%	87%	87%
Fluorene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB046270	mg/kg	0.1	<0.1	0%	90%	86%
Anthracene	LB046270	mg/kg	0.1	<0.1	0%	102%	98%
Fluoranthene	LB046270	mg/kg	0.1	<0.1	0%	124%	129%
Pyrene	LB046270	mg/kg	0.1	<0.1	0%	125%	116%
Benzo(a)anthracene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Chrysene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(b&j)fluoranthene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(k)fluoranthene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(a)pyrene	LB046270	mg/kg	0.1	<0.1	0%	97%	96%
Indeno(1,2,3-cd)pyrene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Dibenzo(a&h)anthracene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB046270	mg/kg	0.1	<0.1	0%	NA	NA
Total PAH	LB046270	mg/kg	0.8	<0.8	0%	NA	NA
Carcinogenic PAHs (as BaP TEQ)*	LB046270	TEQ	0.2	<0.2	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB046270	%	-	100%	0%	100%	98%
2-fluorobiphenyl (Surrogate)	LB046270	%	-	98%	2%	104%	100%
d14-p-terphenyl (Surrogate)	LB046270	%	-	100%	15%	110%	96%

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB046346	mg/kg	3	<3	42%	94%	69%
Cadmium, Cd	LB046346	mg/kg	0.3	<0.3	0%	99%	75%
Chromium, Cr	LB046346	mg/kg	0.3	<0.3	21%	99%	78%
Copper, Cu	LB046346	mg/kg	0.5	<0.5	55%	99%	78%
Lead, Pb	LB046346	mg/kg	1	<1	17 - 44%	100%	65%
Nickel, Ni	LB046346	mg/kg	0.5	<0.5	10%	98%	75%
Zinc, Zn	LB046346	mg/kg	0.5	<0.5	2%	101%	70%

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery	MS %Recovery
TRH C10-C14	LB046270	mg/kg	20	<20	98%	125%
TRH C15-C28	LB046270	mg/kg	45	<45	95%	115%
TRH C29-C36	LB046270	mg/kg	45	<45	75%	113%
TRH C37-C40	LB046270	mg/kg	100	<100	NA	NA
TRH C10-C36 Total	LB046270	mg/kg	110	<110	NA	NA
TRH C10-C40 Total	LB046270	mg/kg	210	<210	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery	MS %Recovery
TRH >C10-C16 (F2)	LB046270	mg/kg	25	<25	98%	108%
TRH >C16-C34 (F3)	LB046270	mg/kg	90	<90	88%	118%
TRH >C34-C40 (F4)	LB046270	mg/kg	120	<120	70%	NA

VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Benzene	LB046236	mg/kg	0.1	<0.1	71%
Toluene	LB046236	mg/kg	0.1	<0.1	69%
Ethylbenzene	LB046236	mg/kg	0.1	<0.1	70%
m/p-xylene	LB046236	mg/kg	0.2	<0.2	75%
o-xylene	LB046236	mg/kg	0.1	<0.1	77%

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Naphthalene	LB046236	mg/kg	0.1	<0.1	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB046236	%	-	88%	90%
d4-1,2-dichloroethane (Surrogate)	LB046236	%	-	88%	91%
d8-toluene (Surrogate)	LB046236	%	-	83%	86%
Bromofluorobenzene (Surrogate)	LB046236	%	-	87%	98%

Totals

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Total Xylenes*	LB046236	mg/kg	0.3	<0.3	NA
Total BTEX*	LB046236	mg/kg	0.6	<0.6	NA

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TRH C6-C10	LB046236	mg/kg	25	<25	88%
TRH C6-C9	LB046236	mg/kg	20	<20	87%

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB046236	%	-	88%	90%
d4-1,2-dichloroethane (Surrogate)	LB046236	%	-	88%	91%
d8-toluene (Surrogate)	LB046236	%	-	83%	86%
Bromofluorobenzene (Surrogate)	LB046236	%	-	87%	98%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Benzene (F0)	LB046236	mg/kg	0.1	<0.1	NA
TRH C6-C10 minus BTEX (F1)	LB046236	mg/kg	25	<25	124%

METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependant on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	Carcinogenic PAHs may be expressed as Benzo(a)pyrene equivalents by applying the BaP toxicity equivalence factor (NEPM 1999, June 2013, B7). These can be reported as the individual PAHs and as a sum of carcinogenic PAHs
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
<http://www.sgs.com.au.pv.sgs.v3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx>. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This report must not be reproduced, except in full.

Request for Laboratory Services and Chain of Custody Form

SGS Australia, Unit 16, 33 Maddox Street, Alexandria, NSW 2015 Ph: +61 2 8594 0400 Fax: +61 2 8594 0499 Email: au.samplerreceipt.sydney@sgs.com

Laboratory Section			
Received Date: <u>11/10/2013</u>	Received By: <u>Karla</u>	Cooling Method: ☐ Ice ☒ Repack ☐ None	Samples intact: ☒ Yes ☐ No
Logged-in Date: <u>11/10/2013</u>	Time of Receipt: <u>1:35 PM</u>	Cooler Sealed: ☒ Yes ☐ No ☐ N/A	Temperature: ☐ Ambient ☒ Chilled

COD must pay via cheque or credit card before analysis is commenced, AMEX & DINERS cards incur a 5% surcharge

INVOICE TO:	Name:		Quote #:	
	Company:	DLA Environmental	Attached Parameter List:	☐ es ☐ io
	Address:	Unit 2b/30 Leighton Place Hornsby	Replacement Sample Containers Required:	☐ es ☐ io
			Results Required By:	<u>STANDARD</u> Urgent TA requires lab approval
	Email:	<u>dlassociates@bigpond.com</u>	Notes:	<u>TORNTON</u>
	Phone:	9476 1765	Fax:	

Client information	PO No.:	Project No.: DL3184 - Gessner
--------------------	---------	-------------------------------

Company Name:		DLA Environmental	
Contact Name:		ED	
Address:		Unit 2b/30 Leighton Place Hornsby	
Phone Number:		9476 1765	After Hours Phone Number:
Fax Number:			
Email:		dlasec@dlapond.com dlaenvironmental@bigpond.com	

Note: Results will be sent via email to an unlimited number of addresses for no additional fee. In the absence of email, fax is available upon request.

Indicate results format (please check one): Email ☒ Fax ☐

SAMPLE INFORMATION

[illegible]

Sampled By:	<i>[Signature]</i>	Date:	11/10/13
Relinquished By:	<i>[Signature]</i>	Date:	11/10/13 Time:



Approved: D. Liang

JOB No. SE121423

[illegible]



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET35557/ 38737 / 1 - 8

Your ref : DL3184 - Greenacre

NATA Accreditation No: 14484

15 October 2013

DLA Environmental
2B/30 Leighton Street
Hornsby NSW 2077

Attn: Mr David Lane

Dear David

Asbestos Identification

This report presents the results of eight samples, forwarded by DLA Environmental on 11 October 2013, for analysis for asbestos.

1.Introduction:Eight samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method.
(Safer Environment Method 1.)

3. Results : **Sample No. 1. ASET35557 / 38737 / 1. BH1 - 0.3.**
Approx dimensions 8.7 cm x 8.5 cm x 7.6 cm
The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of glass.
No asbestos detected.

Sample No. 2. ASET35557 / 38737 / 2. BH2 - 0.3.
Approx dimensions 8.4 cm x 8.2 cm x 7.6 cm
The sample consisted of a mixture of sandy clayish soil, stones, plant matter, fragments of plaster and brick.
No asbestos detected.

Sample No. 3. ASET35557 / 38737 / 3. BH4 - 0.3.
Approx dimensions 8.6 cm x 8.3 cm x 7.5 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of glass and coal like material.
No asbestos detected.

Sample No. 4. ASET35557 / 38737 / 4. BH5 - 0.2.
Approx dimensions 8.4 cm x 8.3 cm x 7.7 cm
The sample consisted of a mixture of clayish soil, stones and plant matter.
No asbestos detected.

Sample No. 5. ASET35557 / 38737 / 5. BH6 - 0.3.
Approx dimensions 8.7 cm x 8.3 cm x 7.5 cm
The sample consisted of a mixture of clayish sandy soil, stones, plant matter and fragments of cement.
No asbestos detected.

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635

PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: aset@bigpond.net.au WEBSITE: www.Ausset.com.au

OCCUPATIONAL HEALTH & SAFETY STUDIES • INDOOR AIR QUALITY SURVEYS • HAZARDOUS MATERIAL SURVEYS • RADIATION SURVEYS • ASBESTOS SURVEYS
ASBESTOS DETECTION & IDENTIFICATION • REPAIR & CALIBRATION OF SCIENTIFIC EQUIPMENT • AIRBORNE FIBRE & SILICA MONITORING



Sample No. 6. ASET35557 / 38737 / 6. BH7 - 0.1.

Approx dimensions 6.8 cm x 6.4 cm x 6.2 cm

The sample consisted of a mixture of clayish soil, stones and plant matter.

No asbestos detected.

Sample No. 7. ASET35557 / 38737 / 7. BH8 - 0.2.

Approx dimensions 8.9 cm x 8.5 cm x 7.6 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of brick.

No asbestos detected.

Sample No. 8. ASET35557 / 38737 / 8. BH9 - 0.1.

Approx dimensions 7.6 cm x 7.2 cm x 6.4 cm

The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of brick.

No asbestos detected.

Analysed and reported by,

A handwritten signature in black ink, appearing to read "Laxman Dias". The signature is fluid and cursive, with a long horizontal stroke at the end.

Laxman Dias. BSc
Analyst / Approved Identifier
Approved Signatory



This document is issued in accordance with
NATA's Accreditation requirements. Accredited
for compliance with ISO/IEC 17025.

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

Suite 710/ 90 George Street Hornsby NSW 2077 PO Box 1644 Hornsby Westfield NSW 1635

Ph: 02 9987 2183 Fax: 02 9987 2151 Email: aset@bigpond.net.au

ASEP 35557 / 38737 / 1-8

ASET JOB NO: Company Name & Address: DLA Environmental 2B/30 Leighton Place Hornsby NSW 2077				Contact Name: Ed Job No: DL3184 - Greenacre Project Name: Email Results to: dlaenvironmental@bigpond.com		SMF Asbest Asbestos in material Asbestos Fibre Count Asbestos in Water Asbestos W/W%
Contact Ph: 9476 1765						
	Sample ID	Date	Matrix	Container	Sample Location	
1	BH1 - 0.3	11/10	Soil	BAG		✓
2	BH2 - 0.3	↓	↓	↓		↓
3	BH4 - 0.3					
4	BH5 - 0.2					
5	BH6 - 0.3					
6	BH7 - 0.1					
7	BH8 - 0.2					
8	BH9 - 0.1					
Relinquished By: DLA Date & Time: 11/10/13 Signature: [Signature] Received By: [Signature] Date & Time: 11/10/13 13:10 Signature: [Signature] Turn around time 24 Hrs ☐ 3 Days ☐ 48 Hrs ☐ 5 Days ☒ Method of Shipment						

Appendix B

95% UCL Data Calculations

General UCL Statistics for Full Data Sets

User Selected Options

From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Arsenic

General Statistics

Number of Valid Observations 14
Number of Missing Values 3
Number of Distinct Observations 6

Raw Statistics

Minimum 4
Maximum 10
Mean 6.571
Median 6.5
SD 1.95
Std. Error of Mean 0.521
Coefficient of Variation 0.297
Skewness 0.492

Log-transformed Statistics

Minimum of Log Data 1.386
Maximum of Log Data 2.303
Mean of log Data 1.842
SD of log Data 0.298

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic 0.926
Shapiro Wilk Critical Value 0.874

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic 0.943
Shapiro Wilk Critical Value 0.874

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 7.494

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 7.502
95% Modified-t UCL (Johnson-1978) 7.506

Assuming Lognormal Distribution

95% H-UCL 7.709
95% Chebyshev (MVUE) UCL 8.876
97.5% Chebyshev (MVUE) UCL 9.873
99% Chebyshev (MVUE) UCL 11.83

Gamma Distribution Test

k star (bias corrected) 9.792
Theta Star 0.671
MLE of Mean 6.571
MLE of Standard Deviation 2.1
nu star 274.2
Approximate Chi Square Value (.05) 236.8
Adjusted Level of Significance 0.0312
Adjusted Chi Square Value 232.2

Anderson-Darling Test Statistic 0.33
Anderson-Darling 5% Critical Value 0.734
Kolmogorov-Smirnov Test Statistic 0.152
Kolmogorov-Smirnov 5% Critical Value 0.229

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL 7.608
95% Adjusted Gamma UCL 7.759

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL 7.429
95% Jackknife UCL 7.494
95% Standard Bootstrap UCL 7.408
95% Bootstrap-t UCL 7.562
95% Hall's Bootstrap UCL 7.455
95% Percentile Bootstrap UCL 7.429
95% BCA Bootstrap UCL 7.429
95% Chebyshev(Mean, Sd) UCL 8.843
97.5% Chebyshev(Mean, Sd) UCL 9.826
99% Chebyshev(Mean, Sd) UCL 11.76

Potential UCL to Use

Use 95% Student's-t UCL 7.494

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cadmium

General Statistics

Number of Valid Observations 6
Number of Missing Values 11

Number of Distinct Observations 4

Raw Statistics

Minimum 0.4
Maximum 1
Mean 0.583
Median 0.5
SD 0.214
Std. Error of Mean 0.0872
Coefficient of Variation 0.366
Skewness 1.981

Log-transformed Statistics

Minimum of Log Data -0.916
Maximum of Log Data 0
Mean of log Data -0.584
SD of log Data 0.314

Warning: There are only 4 Distinct Values in this data
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic 0.75
Shapiro Wilk Critical Value 0.788

Data not Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 0.759
95% UCLs (Adjusted for Skewness)
95% Adjusted-CLT UCL (Chen-1995) 0.802
95% Modified-t UCL (Johnson-1978) 0.771

Gamma Distribution Test

k star (bias corrected) 5.696
Theta Star 0.102
MLE of Mean 0.583
MLE of Standard Deviation 0.244
nu star 68.35
Approximate Chi Square Value (.05) 50.32
Adjusted Level of Significance 0.0122
Adjusted Chi Square Value 44.79

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL 0.792
95% Adjusted Gamma UCL 0.89

Potential UCL to Use

Lognormal Distribution Test

Shapiro Wilk Test Statistic 0.833
Shapiro Wilk Critical Value 0.788

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL 0.803
95% Chebyshev (MVUE) UCL 0.905
97.5% Chebyshev (MVUE) UCL 1.045
99% Chebyshev (MVUE) UCL 1.321

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL 0.727
95% Jackknife UCL 0.759
95% Standard Bootstrap UCL 0.712
95% Bootstrap-t UCL 1.104
95% Hall's Bootstrap UCL 1.546
95% Percentile Bootstrap UCL 0.733
95% BCA Bootstrap UCL 0.75
95% Chebyshev(Mean, Sd) UCL 0.964
97.5% Chebyshev(Mean, Sd) UCL 1.128
99% Chebyshev(Mean, Sd) UCL 1.451

Use 95% Approximate Gamma UCL 0.792

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General Statistics

Number of Valid Observations 17

Number of Distinct Observations 13

Raw Statistics

Minimum 5
Maximum 32
Mean 16.82
Median 18
SD 8.48
Std. Error of Mean 2.057
Coefficient of Variation 0.504
Skewness 0.0202

Log-transformed Statistics

Minimum of Log Data 1.609
Maximum of Log Data 3.466
Mean of log Data 2.67
SD of log Data 0.61

Relevant UCL Statistics**Normal Distribution Test**

Shapiro Wilk Test Statistic 0.934
Shapiro Wilk Critical Value 0.892

Data appear Normal at 5% Significance Level**Lognormal Distribution Test**

Shapiro Wilk Test Statistic 0.899
Shapiro Wilk Critical Value 0.892

Data appear Lognormal at 5% Significance Level**Assuming Normal Distribution**

95% Student's-t UCL 20.41

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 20.22
95% Modified-t UCL (Johnson-1978) 20.42

Assuming Lognormal Distribution

95% H-UCL 24.14

95% Chebyshev (MVUE) UCL 28.76
97.5% Chebyshev (MVUE) UCL 33.78
99% Chebyshev (MVUE) UCL 43.63

Gamma Distribution Test

k star (bias corrected) 2.865
Theta Star 5.873
MLE of Mean 16.82
MLE of Standard Deviation 9.94
nu star 97.39
Approximate Chi Square Value (.05) 75.63
Adjusted Level of Significance 0.0346
Adjusted Chi Square Value 73.62

Anderson-Darling Test Statistic 0.588
Anderson-Darling 5% Critical Value 0.744
Kolmogorov-Smirnov Test Statistic 0.169
Kolmogorov-Smirnov 5% Critical Value 0.21

Data appear Gamma Distributed at 5% Significance Level**Assuming Gamma Distribution**

95% Approximate Gamma UCL 21.67
95% Adjusted Gamma UCL 22.26

Potential UCL to Use**Data Distribution****Data appear Normal at 5% Significance Level****Nonparametric Statistics**

95% CLT UCL 20.21
95% Jackknife UCL 20.41
95% Standard Bootstrap UCL 20.11
95% Bootstrap-t UCL 20.39
95% Hall's Bootstrap UCL 20.2
95% Percentile Bootstrap UCL 20
95% BCA Bootstrap UCL 20.06
95% Chebyshev(Mean, Sd) UCL 25.79
97.5% Chebyshev(Mean, Sd) UCL 29.67
99% Chebyshev(Mean, Sd) UCL 37.29

Use 95% Student's-t UCL 20.41**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General Statistics

Number of Valid Observations 17

Number of Distinct Observations 13

Raw Statistics

Minimum 9
Maximum 340
Mean 41.18
Median 17
SD 80.42
Std. Error of Mean 19.5
Coefficient of Variation 1.953
Skewness 3.644

Log-transformed Statistics

Minimum of Log Data 2.197
Maximum of Log Data 5.829
Mean of log Data 3.057
SD of log Data 0.908

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic 0.411
Shapiro Wilk Critical Value 0.892

Data not Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 75.23

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 91.68
95% Modified-t UCL (Johnson-1978) 78.1

Gamma Distribution Test

k star (bias corrected) 0.769
Theta Star 53.54
MLE of Mean 41.18
MLE of Standard Deviation 46.95
nu star 26.15
Approximate Chi Square Value (.05) 15.5
Adjusted Level of Significance 0.0346
Adjusted Chi Square Value 14.64
Anderson-Darling Test Statistic 2.926
Anderson-Darling 5% Critical Value 0.771
Kolmogorov-Smirnov Test Statistic 0.372
Kolmogorov-Smirnov 5% Critical Value 0.216

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL 69.49
95% Adjusted Gamma UCL 73.55

Potential UCL to Use

Lognormal Distribution Test

Shapiro Wilk Test Statistic 0.724
Shapiro Wilk Critical Value 0.892

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL 57.14
95% Chebyshev (MVUE) UCL 63.69
97.5% Chebyshev (MVUE) UCL 77.8
99% Chebyshev (MVUE) UCL 105.5

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

95% CLT UCL 73.26
95% Jackknife UCL 75.23
95% Standard Bootstrap UCL 72.34
95% Bootstrap-t UCL 420.1
95% Hall's Bootstrap UCL 233.9
95% Percentile Bootstrap UCL 78
95% BCA Bootstrap UCL 102.8
95% Chebyshev(Mean, Sd) UCL 126.2
97.5% Chebyshev(Mean, Sd) UCL 163
99% Chebyshev(Mean, Sd) UCL 235.2

Use 95% Chebyshev (Mean, Sd) UCL 126.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Lead

General Statistics

Number of Valid Observations 17

Number of Distinct Observations 16

Raw Statistics

Minimum 10
Maximum 79
Mean 34.06
Median 20
SD 24.97
Std. Error of Mean 6.056
Coefficient of Variation 0.733
Skewness 0.988

Log-transformed Statistics

Minimum of Log Data 2.303
Maximum of Log Data 4.369
Mean of log Data 3.297
SD of log Data 0.683

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic 0.775
Shapiro Wilk Critical Value 0.892

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic 0.882
Shapiro Wilk Critical Value 0.892

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 44.63

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 45.57
95% Modified-t UCL (Johnson-1978) 44.87

Assuming Lognormal Distribution

95% H-UCL 50
95% Chebyshev (MVUE) UCL 59.2
97.5% Chebyshev (MVUE) UCL 70.29
99% Chebyshev (MVUE) UCL 92.08

Gamma Distribution Test

k star (bias corrected) 1.945
Theta Star 17.51
MLE of Mean 34.06
MLE of Standard Deviation 24.42
nu star 66.13
Approximate Chi Square Value (.05) 48.42
Adjusted Level of Significance 0.0346
Adjusted Chi Square Value 46.83

Anderson-Darling Test Statistic 1.2
Anderson-Darling 5% Critical Value 0.748
Kolmogorov-Smirnov Test Statistic 0.226
Kolmogorov-Smirnov 5% Critical Value 0.211

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL 46.52
95% Adjusted Gamma UCL 48.1

Potential UCL to Use

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

95% CLT UCL 44.02
95% Jackknife UCL 44.63
95% Standard Bootstrap UCL 43.76
95% Bootstrap-t UCL 46.35
95% Hall's Bootstrap UCL 43.07
95% Percentile Bootstrap UCL 44.12
95% BCA Bootstrap UCL 45.59
95% Chebyshev(Mean, Sd) UCL 60.46
97.5% Chebyshev(Mean, Sd) UCL 71.88
99% Chebyshev(Mean, Sd) UCL 94.31

Use 95% Chebyshev (Mean, Sd) UCL 60.46

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Mercury

General Statistics

Number of Valid Observations 0

Number of Distinct Observations 0

Number of Missing Values 17

Warning: This data set only has 0 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Mercury was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

General Statistics

Number of Valid Observations 17

Number of Distinct Observations 8

Raw Statistics

Minimum 2
Maximum 15
Mean 6.647
Median 7
SD 3.372
Std. Error of Mean 0.818
Coefficient of Variation 0.507
Skewness 0.867

Log-transformed Statistics

Minimum of Log Data 0.693
Maximum of Log Data 2.708
Mean of log Data 1.762
SD of log Data 0.556

Relevant UCL Statistics**Normal Distribution Test**

Shapiro Wilk Test Statistic 0.915
Shapiro Wilk Critical Value 0.892

Data appear Normal at 5% Significance Level**Lognormal Distribution Test**

Shapiro Wilk Test Statistic 0.926
Shapiro Wilk Critical Value 0.892

Data appear Lognormal at 5% Significance Level**Assuming Normal Distribution**

95% Student's-t UCL 8.075

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 8.176
95% Modified-t UCL (Johnson-1978) 8.103

Assuming Lognormal Distribution

95% H-UCL 9.093

95% Chebyshev (MVUE) UCL 10.84
97.5% Chebyshev (MVUE) UCL 12.62
99% Chebyshev (MVUE) UCL 16.12

Gamma Distribution Test

k star (bias corrected) 3.291
Theta Star 2.02
MLE of Mean 6.647
MLE of Standard Deviation 3.664
nu star 111.9
Approximate Chi Square Value (.05) 88.49
Adjusted Level of Significance 0.0346
Adjusted Chi Square Value 86.31
Anderson-Darling Test Statistic 0.495
Anderson-Darling 5% Critical Value 0.743
Kolmogorov-Smirnov Test Statistic 0.195
Kolmogorov-Smirnov 5% Critical Value 0.21

Data appear Gamma Distributed at 5% Significance Level**Data Distribution****Data appear Normal at 5% Significance Level****Assuming Gamma Distribution**

95% Approximate Gamma UCL 8.406
95% Adjusted Gamma UCL 8.619

Potential UCL to Use**Nonparametric Statistics**

95% CLT UCL 7.992
95% Jackknife UCL 8.075
95% Standard Bootstrap UCL 7.917
95% Bootstrap-t UCL 8.376
95% Hall's Bootstrap UCL 8.571
95% Percentile Bootstrap UCL 8
95% BCA Bootstrap UCL 8.176
95% Chebyshev(Mean, Sd) UCL 10.21
97.5% Chebyshev(Mean, Sd) UCL 11.75
99% Chebyshev(Mean, Sd) UCL 14.78

Use 95% Student's-t UCL 8.075**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General Statistics

Number of Valid Observations 17

Number of Distinct Observations 15

Raw Statistics

Minimum 15
Maximum 320
Mean 75.29
Median 43
SD 80.74
Std. Error of Mean 19.58
Coefficient of Variation 1.072
Skewness 2.179

Log-transformed Statistics

Minimum of Log Data 2.708
Maximum of Log Data 5.768
Mean of log Data 3.928
SD of log Data 0.865

Relevant UCL Statistics**Normal Distribution Test**

Shapiro Wilk Test Statistic 0.716
Shapiro Wilk Critical Value 0.892

Data not Normal at 5% Significance Level**Lognormal Distribution Test**

Shapiro Wilk Test Statistic 0.935
Shapiro Wilk Critical Value 0.892

Data appear Lognormal at 5% Significance Level**Assuming Normal Distribution**

95% Student's-t UCL 109.5

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 118.6
95% Modified-t UCL (Johnson-1978) 111.2

Assuming Lognormal Distribution

95% H-UCL 125.5

95% Chebyshev (MVUE) UCL 142.9
97.5% Chebyshev (MVUE) UCL 173.6
99% Chebyshev (MVUE) UCL 234.1

Gamma Distribution Test

k star (bias corrected) 1.203
Theta Star 62.57
MLE of Mean 75.29
MLE of Standard Deviation 68.64
nu star 40.91
Approximate Chi Square Value (.05) 27.25
Adjusted Level of Significance 0.0346
Adjusted Chi Square Value 26.09
Anderson-Darling Test Statistic 0.787
Anderson-Darling 5% Critical Value 0.757
Kolmogorov-Smirnov Test Statistic 0.189
Kolmogorov-Smirnov 5% Critical Value 0.213

Data follow Appr. Gamma Distribution at 5% Significance Level**Data Distribution****Data Follow Appr. Gamma Distribution at 5% Significance Level****Assuming Gamma Distribution**

95% Approximate Gamma UCL 113
95% Adjusted Gamma UCL 118.1

Potential UCL to Use**Nonparametric Statistics**

95% CLT UCL 107.5
95% Jackknife UCL 109.5
95% Standard Bootstrap UCL 106
95% Bootstrap-t UCL 142.6
95% Hall's Bootstrap UCL 253.3
95% Percentile Bootstrap UCL 108.1
95% BCA Bootstrap UCL 119.4
95% Chebyshev(Mean, Sd) UCL 160.7
97.5% Chebyshev(Mean, Sd) UCL 197.6
99% Chebyshev(Mean, Sd) UCL 270.1

Use 95% Approximate Gamma UCL 113**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix C

Quality Assurance and Quality Control

Appendix C1 – Field Quality Control

During the preliminary site assessment of contaminated sites the integrity of data collected is considered paramount. With the assessment of the Site, a number of measures were taken to ensure the quality of the data. These included:

Sample Containers

Soil samples collected during the investigation were placed immediately into laboratory prepared glass jars with Teflon lid inserts. Standard identification labels were adhered to each individual container and labelled according to depth, date, sampling team and media collected.

Decontamination

All equipment used in the sampling program which includes a hand auger, spades and mixing bowl was decontaminated prior to use and between samples to prevent cross contamination. Decontamination of equipment involved the following procedures:

- Cleaning equipment in potable water to remove gross contamination;
- Cleaning in a solution of Decon 90;
- Rinsing in clean demineralised water then wiping with clean lint free cloths;

DLA Environmental also adopted a sampling gradient of lowest to highest potential contamination to minimise the impact of cross contamination. This gradient was determined from the historical review and the on-site inspection that was carried out prior to sampling.

Sample Tracking, Identification and Holding Times

All samples were forwarded to SGS Australia and EnviroLab under recognised chain of custodies with clear identification outlining the date, location, sampler and sample ID. All samples were recorded by the laboratory as meeting their respective holding times. The sample tracking system is considered adequate for the purposes of sample collection.

Sample Transport

All samples were packed into an esky with ice from the time of collection alongside a trip blank and trip spike. These were transported under chain of custody from the site to SGS Australia in Alexandria and EnviroLab Services Pty Ltd in Chatswood, both NATA registered laboratories. During the project, the laboratories reported that all the samples arrived intact and were analysed within holding times for the respective analytes.

Samples were kept below 4°C at all times, soil samples submitted for asbestos analysis are not required to be kept below 4°C.

Trip Spike

Trip Spike samples are obtained from the laboratory prior to conducting field sampling where volatile substances are suspected. Although a trip spike was omitted on this occasion, DLA's QA/QC procedures for the collection of environmental samples are consistently maintained on all projects. In this regard it is considered that the analytical results would not be biased by volatile losses due to handling and transport.

Trip Blank

A trip blank accompanied the sampling for the sampling process and is not separated from the sample collection and transportation process. The purpose of the trip blank is to identify whether cross-contamination is occurring during the sample collection and transport process. DLA's QA/QC procedures for the collection of environmental samples are consistently maintained on all projects, therefore cross contamination was unlikely between sample containers.

Field Duplicate Samples

Field duplicate samples were prepared in the field through the following process:

- A larger than normal quantity of soil is recovered from the sample location selected for duplication.

- The sample is placed in a decontaminated stainless bowl and mixed as thoroughly as practicable before being divided into equal parts.
- Two Portions of the sub-sample are immediately transferred, one for an intra-laboratory duplicate and another as a sample.
- Samples are placed into a labelled, laboratory supplied 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jars are labelled as the sample and duplicate and immediately placed in a chilled esky.

Duplicate samples were prepared on the basis of sample numbers recovered during the field work. The duplicate sample frequency was computed using the total number of samples analysed as part of this assessment. The duplicate sample frequencies are shown below:

Investigative Samples	17 samples	2 intra - laboratory duplicates	11.76%
		1 inter laboratory duplicate	5.8%

Comparisons were made of the laboratory test results for the duplicate samples with the original samples and the Relative Percentage Difference (RPD) calculated as difference / Average in order to assess the accuracy of the sampling and laboratory test procedures.

The comparisons between the duplicates and original samples indicate acceptable RPDs when they comply with criteria which are commonly set at:

- less than 30% for inorganics and 50% for organics;
- greater than five (5) times the laboratory limit of recording (LOR);
- greater than 5% of the relevant health investigation level (HIL) concentration.

A total of six (6) samples were analysed for RPD analysis with no RPD values recorded to exceed the relative DQO, with the adopted DQOs being compliant with during the site assessment.

Refer to **Table C4** for calculated inter and intra laboratory duplicate RPD calculations.

Table C1 - Inter and Intra Laboratory Duplicate RPD Calculations

Field Duplicate Samples				Asbestos	0.5	160	55	40	3	C6-C10 45	>C10-C16 <1m - 110 1-2m - 240	>C16-C34 NL	>C34-C40 NL	3	300	DDT+DDD+D DE-240	Aldrin+Dieldrin 6	Chlordane-50	Endosulfan - 270
Sample ID	Depth*	Date	Chemical Report		BTEX - <1m					TRH <1m Sand				PAH		Pesticides			
					Benz	Toluen	EthylBe	Xylene	Naph	F1	F2	F3	F4	BaP TEQ	Total	OC			
BH7-0.3	0.3	11/10/2013	EnviroLab 98826	--	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd	--	--	--	--
BH7-0.3a	0.3	11/10/2013	EnviroLab 98826	--	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd	--	--	--	--
RPD				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BH7-0.3	0.3	11/10/2013	EnviroLab 98826	--	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd	--	--	--	--
BH7-0.3b	0.3	11/10/2013	SGS-SE121423	--	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd	--	--	--	--
RPD				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BH9-0.5	0.5	11-Oct-13	EnviroLab 98826	--	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd	--	--	--	--
BH9-0.5a	0.5	11-Oct-13	EnviroLab 98826	--	<0.2	<0.5	<1	<2	<1	<25	<50	<100	<100	nd	nd	--	--	--	--
RPD				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DQO					50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
LOR EnvLab/SGS					0.2/0.1	0.5/0.1	1/0.1	2/0.2	1/0.1	25/20	50/25	100/90	100/120	0.5/0.5	0.8/0.8	0.1/0.1	0.1/0.2	0.1/0.1	0.1/0.1

-- Not Tested; nd: Not Detected above Laboratory LOR

Shaded samples = RPD>DQO + concentrations>5xLOR + concentrations >5% difference relative to land use Criteria

Table C1 - Inter and Intra Laboratory Duplicate RPD Calculations Cont.

Field Duplicate Samplpes				Endrin - 10	Heptachlor - 6	HCB - 10	Methoxychlor - 300		1	500	150	400	30,000	1,200	120	1,200	60,000
Sample ID	Depth*	Date	Chemical Report	Pesticides					Heavy Metals								
				OC				OP	PCB	As	Cd	Cr VI	Cu	Pb	Hg	Ni	Zn
BH7-0.3	0.3	11/10/2013	EnviroLab 98826	--	--	--	--	--	--	7	<0.4	26	13	30	<0.1	7	47
BH7-0.3a	0.3	11/10/2013	EnviroLab 98826	--	--	--	--	--	--	6	<0.4	23	15	30	<0.1	7	49
RPD				0%	0%	0%	0%	0%	0%	0%	0%	12%	14%	0%	0%	0%	4%
BH7-0.3	0.3	11/10/2013	EnviroLab 98826	--	--	--	--	--	--	7	<0.4	26	13	30	0.05	7	47
BH7-0.3b	0.3	11/10/2013	SGS-SE121423	--	--	--	--	--	--	5	<0.3	21	13	28	0.04	5.2	42
RPD				0%	0%	0%	0%	0%	0%	0%	0%	21%	0%	7%	22%	30%	11%
BH9-0.5	0.5	11-Oct-13	EnviroLab 98826	--	--	--	--	--	--	7	<0.4	22	17	16	<0.1	5	23
BH9-0.5a	0.5	11-Oct-13	EnviroLab 98826	--	--	--	--	--	--	7	<0.4	24	16	17	<0.1	6	27
RPD				0%	0%	0%	0%	0%	0%	0%	0%	9%	6%	6%	0%	18%	16%
DQO				50%	50%	50%	50%	50%	50%	30%	30%	30%	30%	30%	30%	30%	30%
LOR EnvLab/SGS				0.1/0.1	0.1/0.1	0.1/0.1	0.1/0.1	0.1/0.2	0.1/0.2	4/3	0.4/0.3	1/0.3	1/0.3	1/1	0.1/0.05	1/0.5	1/0.5

-- Not Tested; nd: Not Detected above Laboratory LOR

Shaded samples = RPD>DQO + concentrations>5xLOR + concentrations >5% difference relative to land use Criteria

Appendix C2 – Laboratory Analytical and Quality Plan

The integrity of analytical data provides the second step in the QA/QC process for total data compliance. The data validation techniques adopted by DLA Environmental are based upon techniques published by the US EPA and in line with methods and guidelines adopted by the NSW EPA and outlined in the NEPM 2013.

Descriptions are provided of the specific mechanisms used in the assessment of accuracy, precision and useability of analytical data within the project.

Refer to **Appendix A-** Sample Log and NATA Accredited Analytical Results

Blanks

Blanks were used for the identification of false positive data. Laboratory blank samples were analysed.

No cross contamination of samples is said to have occurred as a result of laboratory techniques provided all blanks show concentrations below the levels of detection. No results on blank samples were above the level of reporting for any determination during the project.

Spikes and Control Samples

Control sample spikes were utilised for determination of matrix recovery analysis. This involves analysis of spiked control samples and their duplicates, spiked with a known concentration of relative analyte.

Accuracy was assessed by calculation of the percent recovery (%R). The duplicate sample spikes were used to assess the precision of the methods used. The recoveries for all matrix spike analysis were within the acceptance criteria of 60-140%.

Duplicates

Laboratory Duplicates are tested to ensure the results meet the requirements of QA/QC. The samples from the Site showed a percent recovery for all analytes not exceeding the respective laboratory criteria.

Surrogates

To assess the performance of individual organic analysis the laboratory used surrogates. Recoveries were calculated for each surrogate providing an indication of analytical accuracy. Surrogate recoveries for soil samples were all within recommended control limits, indicating that there was an acceptable degree of accuracy in analysing for organic compounds.

Laboratory Detection Limits

Laboratory detection limits for soil and water analyses by SGS and EnviroLab are outlined in Table C5 to C8 below:

Table C5 – Method of Soil Analysis – SGS

Analyte	Method	Level of Reporting Soil mg/kg	
Polycyclic Aromatic Hydrocarbons	US EPA SW 846 Method 8270C	Ind. Analyte	0.1
	SGS Method ID SEO-030 - In house method.	Benzo[b+k] fluoranthene	0.5
		Benzo(a)Pyrene	0.05
Metals	SGS Method ID SEM-005 - In house method.	Hg	0.05
		Ni	0.5
	ICP-OES US EPA SW 846 Method 6010B	Cd-Cr	0.3
	SGS Method ID SEM-010 - In house method.	Cu-Zn	0.5
		Pb	2.0
		As	3.0
Pesticides	US EPA SW 846 Method 8081B	OCP	0.1
	SGS Method ID SEO-005 - In house method.	OPP	0.1
PCB	US EPA SW 846 Method 8082A	PCB	0.1
	SGS Method ID SEO-005 - In house method.		
BTEX	US EPA SW 846 Method 8260 SGS Method ID SEO-017 - In house method.	Benzene	0.5
		Toluene	0.5
		Ethylbenzene	0.5
		Total Xylene	1.5
TPH	US EPA SW 846 Method 8260	C ₆ -C ₉	20
	SGS Method ID SEO-017 - In house method.	C ₁₀ -C ₁₄	20
	US EPA SW 846 Methods 8015B	C ₁₅ -C ₂₈	50
	SGS Method ID SEO-020 - In house method.	C ₂₉ -C ₃₆	50

Table C6 – Method of Water Analysis – SGS

Analyte	Method	Level of Reporting	
		Water µg/kg	
Metals	Digestion – APHA 3030E	As-Cu-Cr-Ni-Pb-Zn	1
	ICP-MS USEPA 6020A Hydride USEPA – 3005A	Hg	0.5
BTEX	USEPA 8020	Benzene	0.5
	USEPA 5030	Toluene	0.5
	USEPA 8260B	Ethylbenzene	0.5
		Total Xylene	1.5
TPH	USEPA 3500	C ₆ -C ₉	40
	USEPA 3510C	C ₁₀ -C ₁₄	100
	USEPA 8015B	C ₁₅ -C ₂₈	200
		C ₂₉ -C ₃₆	200
PAH	USEPA 3510C	Benzo[b+k]	
	USEPA 3550B	fluoranthene	1
	USEPA 8270C	Each other analyte	0.5
	USEPA 8310		
Pesticides	USEPA 3510C	OC	0.2
	USEPA 3550C	OP	0.2
	USEPA 8141B		
	USEPA 8081B		
	USEPA 8082A		
PCB	USEPA 8082	PCB	10
VOC	USEPA 8260C/5030B/5035/524.2/624	VOC	5-10
VHC	USEPA 5021/8260	VHC	5

Table C7 – Method of Soil Analysis – EnviroLab

Analyte	Method	Level of Reporting	
		Soil mg/kg	
PAH	USEPA SW-846 Method 8270,	B(a)P	0.05
		All other Analytes	0.1
Metals	USEPA 200.7	Hg	0.10
	USEPA 7471A	As	4.0
		Cd-Cr-Cu-Ni-Pb-Zn	1
Pesticides	USEPA SW-846 Method 8081	OCP	0.10
	USEPA SW-846 Method 8140	OPP	0.10
	USEPA SW-846 Method 8080		
	USEPA SW-846 Method 8870		
PCB	USEPA SW-846 Method 8080	PCB	0.10
	USEPA SW-846 Method 8081		
BTEX	USEPA SW-846 Method 8260	Benzene	1.0
		Toluene	1.0
		Ethylbenzene	1.0
		Total Xylene	3.0
TPH	USEPA SW-846 Method 8260	C ₆ -C ₉	25
	USEPA SW-846 Method 8000	C ₁₀ -C ₁₄	50
		C ₁₅ -C ₂₈	100
		C ₂₉ -C ₃₆	100

Table C8 – Method of Water Analysis – EnviroLab

Analyte	Method	Level of Reporting	
		Water	mg/L
Metals	USEPA 200.7	As-Cu-Cr-Ni-Pb-Zn-	0.01
	USEPA 3005A	Cd	0.1
		Hg	0.5
BTEX	USEPA 8260	Benzene	1.0
	USEPA 5030	Toluene	1.0
		Ethylbenzene	1.0
		m&p -xylene	1.0
		Ortho-xylene	1.0
TPH	USEPA 8020A	C ₆ -C ₉	10
	USEPA 8000	C ₁₀ -C ₁₄	50
		C ₁₅ -C ₂₈	100
		C ₂₉ -C ₃₆	100
PAH	USEPA 8310	Benzo (b)&(k) fluoranthene	2
	USEPA 8270	Each other Analyte	1
Pesticides	USEPA 8081	OCP	1
		OPP	1
PCB	USEPA 8082		1
VOC	USEPA 8260B		
VHC	USEPA 8260B		

Appendix D

Section 149 Planning Certificate



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

AD Envirotech
4/10-11 Millennium Ct
SILVERWATER NSW 2128

CERTIFICATE DETAILS

NUMBER	20131209	DATE	11-Apr-2013
--------	----------	------	-------------

RECEIPT AND REFERENCE DETAILS

FEE	\$133.00		
RECEIPT NUMBER	2494008	RECEIPT DATE	09-Apr-2013
REFERENCE	9648 6669		

PROPERTY DESCRIPTION

PROPERTY	144 Boronia Road, GREENACRE NSW 2190		
TITLE	Lot 4 DP 236854		
PARISH	Bankstown	COUNTY	CUMBERLAND

PLANNING INSTRUMENTS

In accordance with Section 149(2) and at the date of this certificate the following Environmental Planning Instruments apply to the land.

Local Environmental Plan 2001 Gazetted on 17-May-2002

LAND ZONING

2(a) – Residential A



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

SECTION 149(2) DETAILS

In accordance with section 149(2) of the Environmental Planning and Assessment Act 1979 (as amended) and at the date of this certificate, the following prescribed matters relate to the land.

1. NAMES OF RELEVANT PLANNING INSTRUMENTS AND DCPs

Affected by Bankstown Local Environmental Plan 2001 Amendments and Planning Proposals in respect of general information as detailed in Appendix 1.

Affected by State Environmental Planning Policies (SEPP's), Proposed State Environmental Planning Policies and Deemed State Environmental Planning Policies as detailed in Appendix 2.

Affected by Bankstown Development Control Plan 2005 (refer to Appendix 3 which lists the contents chapters within the DCP).

2. ZONING AND LAND USE UNDER RELEVANT LEPs

The purposes for which the plan or instrument provides that development may be carried out within the zone without the need for development consent are specified in, but not limited to clauses 9 and 14 (exempt development and development by public authorities) of the LEP 2001 plan. Reference should be made to the LEP 2001 plan as a whole for details.

The purposes for which the plan or instrument provides that development may not be carried out within the zone except with development consent are specified in, but not limited to clauses 10 and 11 (complying development and development which is allowed or prohibited within a zone) of the LEP 2001 plan and detailed in Appendix 4. Reference should be made to the LEP 2001 plan as a whole for details.

The purposes for which the plan or instrument provides that development is prohibited within the zone are specified in clause 11 (development which is allowed or prohibited within a zone) of the LEP 2001 plan and detailed in Appendix 4. Reference should be made to the LEP 2001 plan as a whole for details.

The minimum area for a residential lot in Bankstown shall not be less than 550sqm having a width of not less than 15 metres at the building line. Possible variations to these figures may occur under some circumstances, please refer to Bankstown Development Control Plan 2005, for further information.

2A. ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

Unless specified otherwise in this section of the certificate, the land is not within any zone or land use under a Precinct Plan, a proposed Precinct Plan or Part 3 of State Environmental Planning Policy (Sydney Region Growth Centres) 2006.



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

3. COMPLYING DEVELOPMENT

General Housing Code

Complying development under the General Housing Code within "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" **may** be carried out on the land.

Housing Alterations Code

Complying development under the Housing Alterations Code within the provisions of "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" **may** be carried out on the land.

General Commercial and Industrial Code

Complying development under the General Commercial and Industrial Code within the provisions of "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" **may not** be carried out on the land.

The land is non complying because the land has been identified by an environmental planning instrument as being either one of the following zones:-

- 1 Rural,
- 2(a) Residential A, 2(b) Residential B, R2 Low Density Residential, R3 Medium Density Residential,
- 5 Special Uses,
- 6(a) Open Space, 6(b) Private Recreation, RE1 Public Recreation,
- 7 Environment Protection or
- 8 National Parks & Nature Reserves
- Land Unzoned Under LEP 2001 *refer to the Land Zoning of this certificate on page 1.*

OR

The land is affected by the following exemption:-

- A Heritage item *refer to clause 2 of this certificate.*

For further information please contact Council on 9707 9999.

Subdivisions Code (strata subdivision)

Complying development under the Subdivisions Code within "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" **may** be carried out on the land.

Rural Housing Code

Complying development under the Rural Housing Code within "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" **may not** be carried out on the land.

The land is non complying because the land has been identified by an environmental planning instrument as being either one of the following zones:-

- 2(a) Residential A, 2(b) Residential B, R2 Low Density Residential, R3 Medium Density Residential,
- 3(a) Business CBD, 3(b) Business Other Centres, 3(c) Business Enterprise, B7 Business Park
- 4(a) General Industrial, 4(b) Light Industrial,
- 5 Special Uses,
- 6(a) Open Space, 6(b) Private Recreation, RE1 Public Recreation,
- 7 Environment Protection or
- 8 National Parks & Nature Reserves
- Land Unzoned Under LEP 2001 *refer to the Land Zoning of this certificate on page 1.*

OR

The land is affected by one or more of the following 4 exemptions:-

- A Heritage item *refer to clause 2 of this certificate,*
- Land in the 25 or higher ANEF contour..... *refer to clause 7 of this certificate,*
(Unless the development is only for the erection of ancillary development, the alteration of or an addition to ancillary development or the alteration of a dwelling house)
- Acid sulfate soils class 1 or 2 *refer to clause 7 of this certificate,*
- Land in a vegetated buffer area *refer to clause 7 of this certificate,*

Note: If the land is a lot to which the Rural Housing Code [within "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008"] applies, complying development may be carried out on any part of the lot that is not affected by the exemptions above.

For further information please contact Council on 9707 9999.

General Development Code

Complying development under the General Development Code within "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" **may** be carried out on the land.



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

Demolition Code

Complying development under the Demolition Code within "State Environmental Planning Policy (Exempt and Complying Development Codes) 2008" may be carried out on the land.

4. COASTAL PROTECTION

Unless specified otherwise in this section of the certificate, the land is not affected by the operation of Section 38 or 39 of the Coastal Protection Act 1979.

4A. CERTAIN INFORMATION RELATING TO BEACHES AND COASTS

Unless specified otherwise in this section of the certificate, the land is not subject to an order under Part 4D of the Coastal Protection Act 1979 in relation to temporary coastal protection works (or on public land adjacent to the land) and, Council has not been notified under Section 55X of the Coastal Protection Act 1979 that temporary coastal protection works have been placed on the land (or on public land adjacent to the land).

4B. ANNUAL CHARGES UNDER LOCAL GOVERNMENT ACT 1993 FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS

Unless specified otherwise in this section of the certificate, the owner (or any previous owner) has not consented in writing that the land is subject to annual charges under Section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works.

5. MINE SUBSIDENCE

Not affected by Section 15 of the Mine Subsidence Compensation Act 1961, proclaiming land to be a mine subsidence district.

6. ROAD WIDENING AND REALIGNMENT

Not affected by any road widening or road realignment under (1) Division 2 of part 3 of the Roads Act 1993; or (2) any Environmental Planning Instrument; or (3) any resolution of Council. However, should your property be near an arterial or main road you should check with the Roads and Traffic Authority for possible affectations.



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Unless specified otherwise in this section of the certificate, the land is not affected by policies adopted by Council or by any other authority (that has notified Council of its adoption) that restricts development of the land. For bush fire prone land refer to section 11. For flood prone land refer to section 7A.

Affected by a resolution of Council adopting a policy concerning the management of contaminated land. That policy applies to all land in the City of Bankstown and will restrict development of the land if the circumstances set out in the policy prevail. A copy of the policy is available on Council's website at www.bankstown.nsw.gov.au or from the Customer Service Area.

Note: Additional information regarding contaminated land matters for this property may also be provided on part 5 of this section 149 planning certificate. For further information contact Council on Ph.97079999.

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Unless specified otherwise in this section of the certificate, the land is not affected by flood related development controls.

8. LAND RESERVED FOR ACQUISITION

Not affected by either an Environmental Planning Instrument or proposed Environmental Planning Instrument referred to in clause 1 providing for the acquisition of the land or part of the land by a public authority, as referred to in Section 27 of the Environmental Planning & Assessment Act. Reference should be made to the LEP 2001 plan as a whole for details.

9. CONTRIBUTION PLANS

Affected by Bankstown City Council Section 94A Development Contributions Plan 2009 which allows Council to impose a levy on development within the City of Bankstown in accordance with Directions issued by the Minister for Planning. The levy will be spent on the provision of public works and infrastructure. Date of commencement 8th June 2009. For further details on the plan contact Council on 9707 9999 or visit Council's website – www.bankstown.nsw.gov.au

9A. BIODIVERSITY CERTIFIED LAND

Unless specified otherwise in this section of the certificate, the land is not biodiversity certified land within the meaning of Part 7AA of the Threatened Species Conservation Act 1995.

10. BIOBANKING AGREEMENTS

Unless specified otherwise in this section of the certificate, the land is not subject to a Biobanking Agreement under Part 7A of the Threatened Species Conservation Act 1995, made by the Department of Environment, Climate Change and Water that has notified Council of the existence of the agreement.



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

11. BUSHFIRE PRONE LAND

Unless specified otherwise in this section of the certificate, the land is not bushfire prone.

12. PROPERTY VEGETATION PLANS

Unless specified otherwise in this section of the certificate, the land is not subject to a Property Vegetation Plan under the Native Vegetation Act 2003, as approved by any other authority that has notified Council of the existence of the plan.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Unless specified otherwise in this section of the certificate, the land is not subject to a Tree Order under the Trees (Disputes Between Neighbours) Act 2006, made by an authority that has notified Council of the existence of the order.

14. DIRECTIONS UNDER PART 3A

Unless specified otherwise in this section of the certificate, the land is not subject to a Direction by the Minister under section 75P (2) (c1) of the Act that a provision of an EPI does not have an effect.

15. SITE COMPATIBILITY CERTIFICATES & CONDITIONS FOR SENIORS HOUSING

Unless specified otherwise in this section of the certificate, the land is not subject to a development application granted after 12.10.2007 under SEPP (Housing for Seniors or People with a Disability) 2004 setting out the terms of any conditions imposed under clause 18(2) or a current site compatibility certificate issued under clause 25 of the SEPP.

16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Unless specified otherwise in this section of the certificate, the land is not subject to a development application under clause 19 of SEPP (Infrastructure) 2007 where a valid site compatibility certificate has been issued.

17. SITE COMPATIBILITY CERTIFICATES & CONDITIONS FOR AFFORDABLE RENTAL HOUSING

Unless specified otherwise in this section of the certificate, the land is not subject to a development application under SEPP (Affordable Rental Housing) 2009 where a valid site compatibility certificate and conditions have been issued.



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

18. PAPER SUBDIVISION INFORMATION

Unless specified otherwise in this section of the certificate, the land is not subject to a paper subdivision or subdivision order.

MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT, 1997

Unless specified otherwise in this section of the certificate, there are no matters arising under Section 59(2) of the Contaminated Land Management Act 1997.

MATTERS ARISING UNDER THE NATION BUILDING AND JOBS PLAN (STATE INFRASTRUCTURE DELIVERY) ACT, 2009

Unless specified otherwise in this section of the certificate, there are no matters arising under Section 26 of the Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009.

This completes the prescribed matters for the certificate under section 149(2) of the Environmental Planning and Assessment Act 1979, as amended. While this certificate indicates the zoning of the land, it is suggested that the relevant Planning Instrument be inspected on Council's website under Development – Planning Maps or at Council's Customer Service Centre to provide an overall view of the area and the site's surrounding zonings.

SECTION 149(5) DETAILS

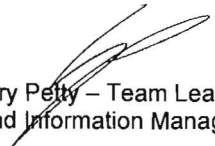
At the date of this certificate, the following relevant matters are provided in good faith in accordance with the requirements of Section 149(5) of the Environmental Planning and Assessment Act 1979.

Council has selected the following matters for checking as those most likely to be of concern and do not comprise an exhaustive list. The absence of any reference to any matter affecting the land shall not imply that any matter not referred to in this certificate does not affect the land.

ADDITIONAL INFORMATION

Unless specified otherwise in this section of the certificate, there are no relevant matters arising under Section 149(5) of the Environmental Planning and Assessment Act 1979.

Please contact Council's general enquiries number listed at the bottom of this sheet for further information about any matter referred to in this certificate.


Larry Petty – Team Leader
Land Information Management



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

Appendix 1

Bankstown Local Environmental Plan 2001 amendments & Planning Proposals. (relating to general information only which may affect part or the whole of the City)

Note: As of 1 July 2009, Draft LEP's have been replaced with "planning proposals". A planning proposal is a document that explains the intended effect of, and justification for, a proposed LEP.

Bankstown Local Environmental Plan 2001 (Amendment No.13), gazetted 22nd November, 2002

This plan aims to:

- (a) manage and facilitate development for the benefit of the community and the City of Bankstown, &
- (b) ensure a level of assessment which is appropriate for the type of development being proposed, &
- (c) protect environmentally sensitive land from inappropriate development.

Bankstown Local Environmental Plan 2001 (Amendment No.16), gazetted 9th January, 2004

This plan aims to:

- (a) correct minor mapping and drafting anomalies in Bankstown Local Environmental Plan 2001, &
- (b) introduce controls for bulky goods complexes in the City of Bankstown, &
- (c) amend definitions to provide consistency across development controls in Bankstown Local Environmental Plan 2001.

Bankstown Local Environmental Plan 2001 (Amendment No.22), gazetted 8th April, 2005

This plan aims to:

- (a) correct minor mapping and drafting anomalies in Bankstown Local Environmental Plan 2001 relating to:
 - the rezoning of certain land, and
 - the floor space ratio for certain land, and
 - the wording of the definition of **gross floor area**, and
 - the wording of a development standard for residential flat buildings on certain land, &
- (b) omit the word "habitually" from the definition of **brothel** in the 2001 plan so as to include premises that are used (but not habitually used) for prostitution within that definition, &
- (c) clarify that the gross floor area of a bulky goods showroom or salesroom in a bulky goods complex is to be at least 500 square metres.

Bankstown Local Environmental Plan 2001 (Amendment No.17), gazetted 8th September, 2006

This plan aims to:

Update references in Bankstown Local Environmental Plan 2001 to provisions in Bankstown Development Control Plan 2005 (adopted by Bankstown City Council on 21st December 2005) relating to exempt and complying development which were previously dealt with in Development Control Plan (DCP) No.35.



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

Appendix 2

State Environmental Planning Policies (SEPP's), Proposed SEPP's and Deemed SEPP's

Note: The names of the relevant instrument's plus their gazettal dates are listed below. For further details please refer to the Department of Planning website www.planning.nsw.gov.au under the heading "planning system – legislation and planning instruments".

SEPP No. 1 – Development Standards, gazetted 17.10.1980
SEPP No. 4 – Development without Consent and Miscellaneous Exempt and Complying Development, gazetted 4.12.1981
SEPP No. 6 – Number of Storeys in a Building, gazetted 10.12.1982
SEPP No.10 – Retention of Low-Cost Rental Accommodation, gazetted 6.7.1984
SEPP No.19 – Bushland in Urban Areas, gazetted 24.10.1986
SEPP No.21 – Caravan Parks, gazetted 24.4.1992
SEPP No.22 – Shops and Commercial Premises, gazetted 9.1.1987
SEPP No.30 – Intensive Agriculture, gazetted 8.12.1989
SEPP No.32 – Urban Consolidation (Redevelopment of Urban Land), gazetted 15.11.1991
SEPP No.33 – Hazardous and Offensive Development, gazetted 13.3.1992
SEPP No.50 – Canal Estate Development, gazetted 10.11.1997
SEPP No.55 – Remediation of Land, gazetted 28.8.1998
SEPP No.62 – Sustainable Aquaculture, gazetted 25.8.2000
SEPP No.64 – Advertising and Signage, gazetted 16.3.2001
SEPP No.65 – Design Quality of Residential Flat Development, gazetted 26.7.2002
SEPP – (Housing for Seniors or People with a Disability) 2004, gazetted 31.3.2004
SEPP – (Building Sustainability Index: BASIX) 2004, gazetted 25.6.2004
SEPP – (Major Development) 2005, gazetted 1.8.2005
SEPP – (Mining, Petroleum Production and Extractive Industries) 2007, gazetted 16.2.2007
SEPP – (Temporary Structures and Places of Public Entertainment) 2007, gazetted 28.9.2007
SEPP – (Infrastructure) 2007, gazetted 21.12.2007
SEPP – (Exempt and Complying Development Codes) 2008, gazetted 12.12.2008
SEPP – (Affordable Rental Housing) 2009, gazetted 31.7.2009

PROPOSED SEPP - Competition SEPP, 27.7.2010

Note: As of 1 July 2009, regional environmental plans (REPs) are no longer part of the hierarchy of environmental planning instruments in NSW. The removal of the REP layer is intended to simplify the State's planning system. All existing REPs (listed below) are now deemed State environmental planning policies (SEPPs).

Deemed SEPP – Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment, gazetted 5.2.1999



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

Appendix 3

Bankstown Development Control Plan 2005

DATE OF APPROVAL / COMMENCEMENT – 21st DECEMBER, 2005

The following is a list of the contents within Bankstown Development Control Plan 2005. If further information is required please contact Council on 9707 9999.

PART	CONTENT
A	Preliminary
B	Site Analysis
C	Definitions
D1	Exempt and Complying Development
D2	Residential Zones
D3	Key Development Sites in Residential Zones
D4	Business Zones
D5	Key Development Sites in Business Zones
D6	Industrial Zones
D7	Sustainable Commercial and Industrial Development
D8	Parking
D9	Advertising Signs
D10	Child Care Centres
D11	Educational Establishments
D12	Places of Public Worship
D13	Health Consulting Rooms
D14	Brothels
D15	Communications Facilities
E1	Demolition and Construction
E2	Tree Preservation Order
E3	Flood Risk Management

Please note: Council may be exhibiting draft changes to the development control plan that may affect your land. To find out more, please contact Council on 9707 9999 or check Council's website - www.bankstowncity.nsw.gov.au



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

Appendix 4 - Development which is allowed or prohibited within a zone

Unless specified in other parts of the LEP 2001 plan, the table below indicates that development may be carried out with consent where "yes" is shown corresponding to that development, and where "yes" is not shown corresponding to that development, the development is prohibited.

Zone											
Development for the purpose of:	Rural	Residential		Business			Industrial		Special Uses	Open Space	
	1	2(a)	2(b)	3(a)	3(b)	3(c)	4(a)	4(b)	5	6(a)	6(b)
Agriculture	yes									yes	
Amusement centres				yes	yes						
Animal boarding or training establishments	yes										
Bed and breakfast establishments		yes	yes								
Boarding-houses			yes	yes	yes						
Brothels							yes	yes			
Bulky goods complex				yes							
Bulky goods salesrooms or showrooms				yes	yes	yes	yes	yes			
Business premises				yes	yes	yes					
Car parks		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Caravan parks										yes	
Centre based child care centres		yes	yes	yes	yes	yes	yes	yes	yes		
Communications facilities	yes			yes	yes	yes	yes	yes	yes	yes	yes
Community facilities		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Convenience stores				yes	yes	yes	yes	yes			
Dams	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes
Depots							yes	yes			
Dual occupancies		yes	yes	yes	yes						
Dwelling houses	yes	yes	yes	yes	yes						
Educational establishments		yes	yes	yes	yes				yes		
Entertainment establishments				yes	yes	yes					
Entertainment facilities				yes	yes	yes	yes				
Extractive industries	yes										
Family day care centres		yes	yes	yes	yes						
Family housing		yes	yes								
Generating works							yes	yes			
Hazardous industries											
Hazardous storage establishments											
Health consulting rooms		yes	yes	yes	yes	yes	yes	yes			
Helicopter landing sites				yes			yes		yes	yes	yes
Heliports											
High-tech industries						yes					
Highway service centres					yes	yes	yes				
Home-based child care centres		yes	yes								
Home business	yes	yes	yes	yes	yes						
Home offices	yes	yes	yes	yes	yes						



PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT
ACT, 1979

Zone											
Development for the purpose of:	Rural	Residential		Business			Industrial		Special Uses	Open Space	
	1	2(a)	2(b)	3(a)	3(b)	3(c)	4(a)	4(b)	5	6(a)	6(b)
Hospitals		yes	yes	yes	yes	yes	yes	yes	yes		
Hotels				yes	yes	yes	yes				
Housing for older people or people with a disability		yes	yes	yes	yes				yes		
Industries							yes				
Institutions							yes				
Junk yards							yes				
Landfilling	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes
Light industries							yes	yes			
Marinas		yes	yes							yes	yes
Materials recycling yards							yes				
Medical centres				yes	yes	yes	yes	yes			
Mines											
Motels			yes	yes	yes	yes	yes	yes			
Motor showrooms				yes	yes	yes	yes	yes			
Offensive industries											
Offensive storage establishments											
Office premises				yes	yes	yes	yes	yes			
Passenger transport terminals				yes	yes	yes	yes	yes			
Places of public worship		yes	yes	yes	yes	yes	yes	yes			
Plant hire						yes	yes	yes			
Public buildings		yes	yes	yes	yes	yes	yes	yes	yes		
Recreation areas	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Recreation facilities	yes			yes	yes	yes	yes	yes		yes	yes
Registered clubs				yes	yes	yes	yes	yes			yes
Research facilities				yes	yes	yes	yes	yes			
Residential flat buildings			yes	yes	yes						
Restaurants				yes	yes	yes	yes	yes			
Restricted premises				yes							
Retail plant nurseries				yes	yes	yes	yes	yes			
Roadside stalls											
Road transport terminals							yes				
Rowhouses		yes	yes	yes	yes						
Sanctuaries	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Serviced apartments			yes	yes	yes						
Service stations				yes	yes	yes	yes	yes			
Shops				yes	yes						
Transport depots							yes				
Utility installations	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Vehicle body repair workshops							yes	yes			
Vehicle repair stations				yes	yes	yes	yes	yes			
Villas		yes	yes	yes	yes						
Warehouses or distribution centres					yes	yes	yes	yes			
Waste disposal											

Appendix E

Dangerous Goods Search



WorkCover NSW
92-100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252
T 02 4321 5000 F 02 4325 4145
WorkCover Assistance Service 13 10 50
DX 731 Sydney workcover.nsw.gov.au

Our Ref: D13/044425
Your Ref: Yannick Hammond

10 April 2013

Attention: Yannick Hammond
AD Envirotech Australia Pty Ltd
Unit 4,
10-11 Millenium Ct
Silverwater NSW 2128

Dear Ms Hammond,

RE SITE: 144 Boronia Rd Greenacre NSW

I refer to your site search request received by WorkCover NSW on 5 April 2013 requesting information on licences to keep dangerous goods for the above site.

Enclosed are copies of the documents that WorkCover NSW holds on Dangerous Goods Licence 35/002817 relating to the storage of dangerous goods at the above-mentioned premises, as listed on the Stored Chemical Information Database (SCID).

Please note the correct address is 44 Broadmeadow Rd Broadmeadow the site you seek information on is not in Newcastle.

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely


Brent Jones
Senior Licensing Officer
Dangerous Goods Notification Team



INSPECTORS NOTICE

APPLICATION FOR
LICENCE FOR THE KEEPING OF DANGEROUS GOODS
UNDER AND SUBJECT TO THE PROVISIONS OF THE
DANGEROUS GOODS ACT, 1975
AND REGULATIONS THEREUNDER.

DEPT TYPE	PRODUCT	UNITS (ART)	CLASS	FEE
1 U/G TANK	FLAMMABLE LIQUID	5,000	3	\$15

Tank to be abandoned,

21.2.89.

Deleted
7 APR 1989
PW

DECLARATION: I certify that the details shown are correct (amend if necessary) and forward

herewith fee of \$..... (Signature)..... (Date).....

APPLICANT: *GAPES J G*
144 BORONIA AVE
GREENACRE 2190

AMOUNT PAYABLE
\$15.00

PREMISES TO BE LICENSED OR REGISTERED IF NOT AS ABOVE

4- 35 0028178 15 JUNE 89
LICENCE/REG. No. NEXT EXPIRY

1. Applications must be forwarded to the Chief Inspector of Inflammable Liquids, Explosives Department, Exchange Sydney, N.S.W. 2000 and must be accompanied by the prescribed fee, as set out hereunder:
 Registration of Premises (Fee \$3.00 p.a.) - For quantities not exceeding 300 gallons of mineral oil and 100 gallons of mineral spirit, if kept together; or 800 gallons of mineral oil and 100 gallons of mineral spirit, if kept in separate depots; or 500 gallons of mineral spirit, if kept in an underground tank depot; or 800 gallons of mineral oil and 500 gallons of mineral spirit, if mineral spirit is kept in an underground tank depot.
 In addition to, or in lieu of the above, similar quantities of Dangerous Goods of Classes 1 and 2 may be kept under the like conditions; reading Dangerous Goods of Class 1 for the words Mineral Spirit and Dangerous Goods of Class 2 for the words Mineral Oil.
 Store License, Div. A (Fee, \$6.50 p.a.) - For quantities in excess of those stated above, but not exceeding 4,000 gallons mineral oil and/or mineral spirit, and/or Dangerous Goods of Classes 1, 2 and 9.
 Store License, Div. B (Fee, See Regulation 7) - For quantities exceeding 4,000 gallons of mineral spirit, and/or dangerous goods of Classes 1 and 2, and/or dangerous goods of Class 3.
 For the keeping of Dangerous Goods of Classes 3 and/or 4. (\$15.00 p.a.). B.P.
 Fees for the keeping of inflammable liquid and dangerous goods in excess of the above stated quantities and also for Liquid Petroleum Gas storage are set out in Regulation 7.

1. Name of occupier including full christian names. 2. Trading Name (if any) 3. Locality of the premises in which the depot or depots are situated 4. Postal address 5. Occupation 6. Nature of premises (dwelling, garage etc.)	John Graham Lopes No. or Name <u>1111</u> Street <u>Barrovia Ave Rd</u> Town <u>Greenbank</u> Postcode <u>2190</u> Occupation <u>Transport Operator</u>
---	---

7. Particulars of construction of depots and maximum quantities of inflammable liquid and/or Dangerous Goods to be kept at any one time.

PLEASE ATTACH PLAN OF PREMISES

Depot No.	Construction of depots*			Inflammable liquid		Dangerous goods					
	Walls	Roof	Floor	Mineral spirit gallons	Mineral oil gallons	Class 1 gallons	Class 2 gallons	Class 3 lb	Class 4 cu ft	Class 5A water gal	Class 9 gallons
1	Under-ground tank			1000							
2											
3											
4											
5											
6											
7											
8											
9											
10											

* If product is kept in tanks describe depots as underground or aboveground tanks.

Signature of applicant

Date of application _____, 19__

CERTIFICATE OF INSPECTION

I, Inspector Edward Black being an Inspector under the Inflammable Liquid Act, 1915 (as amended), do hereby certify that the premises or store herein referred to and described is suitable with regard to its situation and construction for the safe keeping of inflammable liquid and/or dangerous goods in quantity and nature specified.

Place Sydney

Signature of Inspector

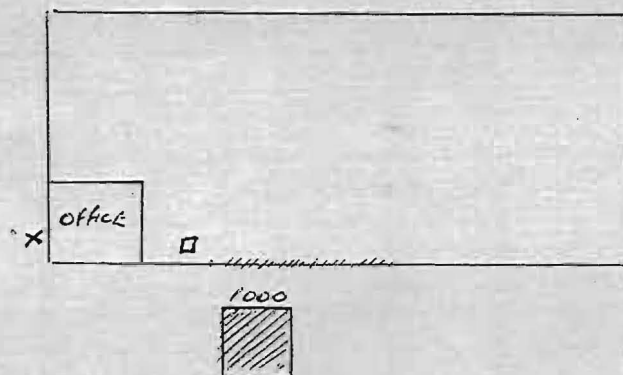
Date 20. 7. 72

PLEASE TURN OVER

INSPECTION RECORDLicence No. ⁴ 2817Licensee: John Graham GapesAddress: 144 Borenia Rd. GwaramuStorage licensed: 1/1000 w/c/s m.s.

BP

Sketch of Premises (Dimensions of depot and distance of same from adjoining "protected works" to be shown).



EXPLANATORY

Inflammable Liquid—

Mineral Oil—includes kerosene, mineral turpentine and white spirit (for cleaning), and compositions containing same.
Mineral Spirit—includes petrol, benzene, benzolene, benzol and naphtha, and compositions containing same.

Dangerous Goods—

- Class 1.—Acetone, amyl acetate, butyl acetate, carbon bisulphide; any combination of substances of an inflammable character suitable for use as an industrial solvent and having a true flashing point of less than 73 degrees Fahrenheit.
Class 2.—Nitro-cellulose (also known as "pyroxylin" and "collodion cotton") moistened with an alcohol, butyl alcohol (also known as "butanol"), methylated spirits, vegetable turpentine; and any liquid or solid containing methylated spirits, having a true flashing point of less than 150 degrees Fahrenheit.
Class 3.—Nitro-cellulose product.
Class 4.—Compressed or dissolved acetylene contained in a porous substance.

DIRECTIONS

1. Applications must be forwarded to the Chief Inspector of Inflammable Liquid, Explosives Department, No. 4 Albert Street, off Phillip Street, Circular Quay, Sydney (Box 48, G.P.O.), and must be accompanied by the prescribed fee, as set out hereunder:—

Registration of Premises (Fee £1 10s. 0d. p.a.).—For quantities not exceeding 300 gallons of mineral oil and 100 gallons of mineral spirit, if kept together; or 800 gallons of mineral oil and 100 gallons of mineral spirit, if kept in separate depots; or 500 gallons of mineral spirit, if kept in an underground tank depot; or 800 gallons of mineral oil and 500 gallons of mineral spirit, if mineral spirit is kept in an underground tank depot.

In addition to, or in lieu of the above, similar quantities of Dangerous Goods of Classes 1 and 2 may be kept under the like conditions; reading Dangerous Goods of Class 1 for the words Mineral Spirit and Dangerous Goods of Class 2 for the words Mineral Oil.

Store License, Div. A (Fee, £3 5s. 0d. p.a.).—For quantities in excess of those stated above, but not exceeding 4,000 gallons mineral oil and/or mineral spirit, and/or Dangerous Goods of Classes 1 and 2.

Store License, Div. B (Fees, See Regulation 7).—For quantities exceeding 4,000 gallons of mineral oil and/or mineral spirit, and/or dangerous goods of Classes 1 and 2, and/or dangerous goods of Class 3.
For the keeping of Dangerous Goods of Classes 3 and/or 4. (£7 10s. 0d. p.a.).

2. The certificate of inspection at foot hereof must be signed by an Inspector under the Inflammable Liquid Act, 1915–1953, or Police Officer, or other officer duly authorised in that behalf, and where the premises are situated outside the Metropolitan Area of Sydney, it is requested that such certificate be obtained prior to forwarding application.

1. Name in full of occupier ... *Edward William Puet*
2. Occupation ... *Contractor*
3. Locality of the premises in which the depot or depots are situated ... *144 Boronia Rd. Bankstown East.*
4. Nature of premises (Dwelling, Garage, Store, etc.) ... *Dwelling*
5. Will mineral spirit be kept in a prescribed underground tank depot?

6. Particulars of construction of depots and maximum quantities of inflammable liquid and/or Dangerous Goods to be kept at any one time.

Depot No.	Construction of Depots.			Inflammable Liquid.		Dangerous Goods.			
	Walls.	Roof.	Floor.	Mineral Spirit. Gallons.	Mineral Oil. Gallons.	Class 1. Gallons.	Class 2. Gallons.	Class 3. lb.	Class 4. cub. ft.
1	<i>Underground Tank</i>			<i>1000</i>					
2									
3									
4									
5									
6									
7									
8									
9									
10									

Date of Application *10-7-56* 19

Signature of Applicant *E. W. Puet*

Postal Address *144 Boronia Road*

East Bankstown

CERTIFICATE OF INSPECTION.

I, *Raymond* being an Inspector under the Inflammable Liquid Act, 1915–53, do hereby certify that the premises or store herein referred to and described is suitable with regard to its situation and construction for the safe keeping of inflammable liquid and/or dangerous goods in quantity and nature specified.

Place *Sydney* *10-7-56*

Signature of Inspector *Raymond*

[PLEASE TURN OVER]

NOT TICKETED

E. W. Mutt,
Mr. Polsonia Ad.
Bankstown

10.000 for M.S. unattached by B.C.R. 3/5/56
M.B. 15/6/56

James

Appendix F

Historical Title Search

TITLE SEARCH

Title Reference: 4/236854

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 4/236854

SEARCH DATE	TIME	EDITION NO	DATE
4/4/2013	9:09 AM	7	15/8/2007

LAND

LOT 4 IN DEPOSITED PLAN 236854
AT GREENACRE
LOCAL GOVERNMENT AREA BANKSTOWN
PARISH OF BANKSTOWN COUNTY OF CUMBERLAND
TITLE DIAGRAM DP236854

FIRST SCHEDULE

GEORGE STEVEN VALIOTIS
STAMATIA VALIOTIS
AS JOINT TENANTS (T AD343972)

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 DP236854 DRAINAGE EASEMENT APPURTENANT TO THE LAND ABOVE DESCRIBED
- 3 AD343973 MORTGAGE TO WESTPAC BANKING CORPORATION
- * 4 AG549120 EASEMENT TO DRAIN WATER 1.5 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE PART DESIGNATED (D) IN PLAN WITH AG549120

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 4/4/2013



I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 18th day of July, 1977.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

CONVERSION TABLE ADDED IN
REGISTRAR GENERAL'S DEPARTMENT

DP 236854 CONTINUED

AC	RD	P	SD	M
-	21		53.1	1
-	27	1/4	69.9	2
-	37	1/2	94.6	5
-	37	5/7	95.0	3
-	36	5/4	96.0	1
-	1		101.2	

190	5	27.49.32
186	5	29.58.52
184	5	31.56.59
125	11	38.3.7
120	11	39.46.4
113	4	40.33.4
112	4	40.33.4
109	4	40.33.4
142	6	45.30.7
141	6	45.30.7
161	2 1/2	49.33.0
163	2 1/2	49.33.6
165	2 1/2	50.32.2

41	-	-	18.953
50	-	-	16.860
58	-	-	17.678
54	10	1/2	16.126
51	5	3/4	15.921
50	-	-	15.820
45	3	1/8	13.795
44	-	-	13.116
44	9	3/8	13.045
39	5	-	10.697

[illegible]

FEET INCHES	METRES
0 1/2	0.13
1	0.25
2	0.51
2 1/4	0.57
3	0.75
3 1/2	0.91
4	1.02
4 3/4	1.16
5	1.27

INSTRUMENT SETTING OUT TERMS OF EASEMENTS AND RESTRICTIONS AS TO USER
INTENDED TO BE CREATED PURSUANT TO SECTION 88B OF THE CONVEYANCING
ACT, 1919.

PART 2.

Plan: DP238884
Full name and address of
Proprietor of the land:
Edward William Ault of 144 Boronia
Road, Bantown as to Certificate of
Title Volume 5790 Folio 166.
Subdivision covered by Council Clerk's
Certificate No. 6645 of 1968.

Identity of easement or
restriction firstly.
referred to in above-
mentioned plan:

Drainage Easement 5 feet wide

Lots burdened:

lots, name of road or authority benefited

19

PART 2.

Terms of easement or restriction in abovementioned plan

Roll and lie right for every person who is at the time entitled to an estate or interest in possession in the land herein indicated as the dominant tenement or any part thereof. Every person within the right shall be bound to lie and at all times to drain against the right of the servient tenement, and shall be bound to maintain the same against rain, storm, spring, soakage, cullege or seepage water in any quantities across and through the land herein so indicated as the servient tenement, together with the right to use, for the purposes of the easement, together with the right to lay, within ditches or pipes in replacement or in substitution thereof and where no such line of pipes exists, to lay, place, and maintain on upon the surface of the servient tenement, ditch and bench or upon the surface of the servient tenement, together with the right to construct, alter, improve, or modify, necessary for this purpose, to enter upon the servient tenement and to remain there for any reasonable time for the purposes of laying, inspecting, cleansing, repairing, maintaining or renewing such pipe line or any part thereof, the servient tenement to such purposes as may be necessary provided that the grantee and the persons authorized by him will take all reasonable precautions to ensure as little disturbance as possible to the surface of the servient tenement and will restore that surface as nearly as practicable to its original condition.

Signed in my presence by EDWARD
WILLIAM AULT who is personally
known to me:

Proprietor of Certificate
of Title Volume 5790 Folio
166.

MINISTRE DE L'ÉDUCATION
MONTREAL

AMENDMENTS AND/OR ADDITIONS MADE ON
PLAN IN THE LAND TITLES OFFICE.

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day. 7th May, 1986



NEW SOUTH WALES

Application No. 15263
Prior Title Volume 5790 Folio 166

STATE OF TITLE
RTY ACT, 1900, as amended.



11204-226

Vol. **11204** Fol. **226**

ID Edition issued 8-12-1969



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

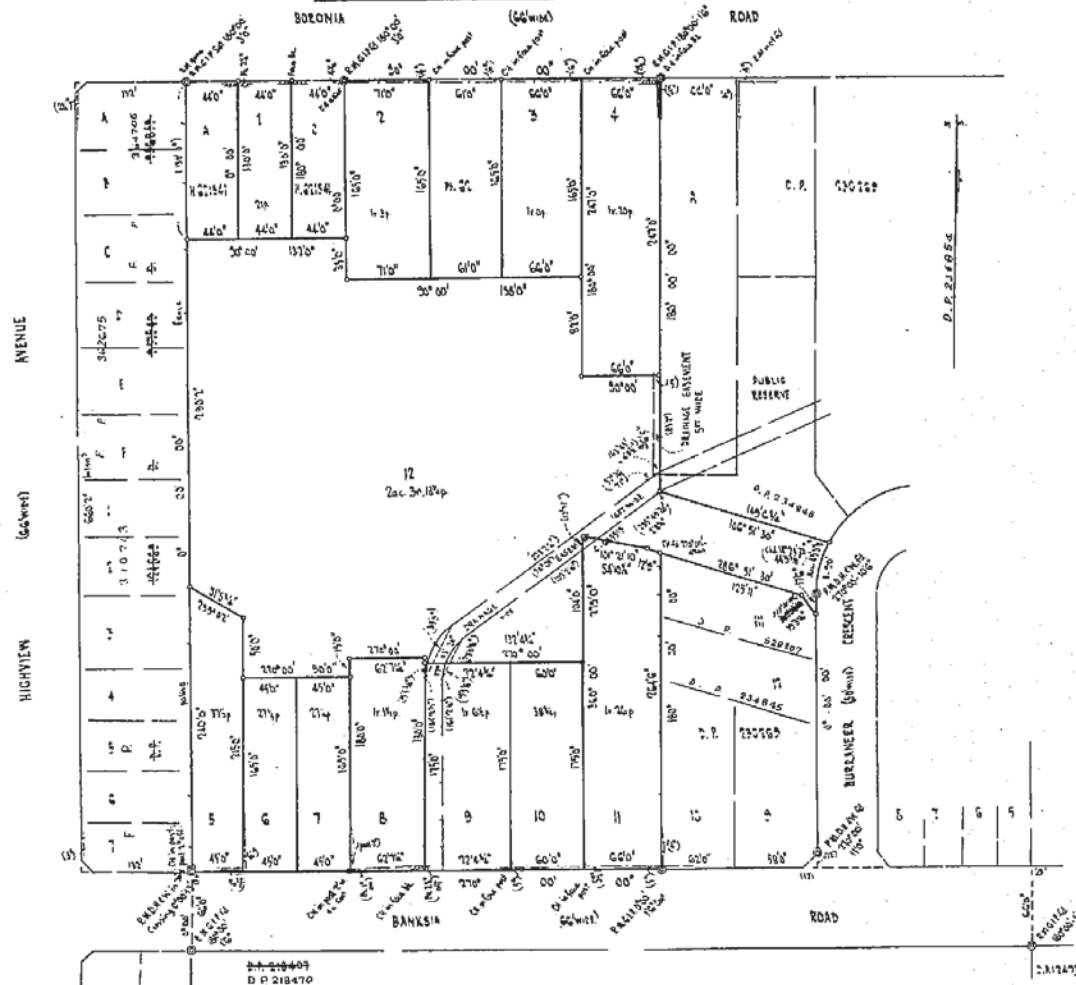
Witness

L. Huchsteg

CANCELLED
Jawatson
Registrar General.



PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 4 in Deposited Plan 236854 at Greenacre in the Municipality of Bankstown Parish of Bankstown and County of Cumberland being part of Portion 7 granted to Daniel Cooper on 14-4-1831.

FIRST SCHEDULE

EDWARD WILLIAM AULT, of Bankstown, Cartage Contractor.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. The registered proprietor holds subject to Section 604 of the Local Government Act, 1919.
3. Mortgage No. P870223 to Australia and New Zealand Bank Limited Entered 8-6-1953. Incorporated 11/11/52
4. Drainage Easement appurtenant to the land above described created by the registration of Deposited Plan 236854. See L167819.

Jawatson
Registrar General

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

183

Appn. No. 15263
 Reference to Last Certificate
 Vol. 5461 Fol. 217
 Deposited Plan No. 5724

New South Wales.



[CERTIFICATE OF TITLE.]

REGISTER BOOK.

Vol. 5730 Fol. 166

CANCELLED

RONALD MARTIN WILLIAMSON, of Bankstown, Lift Labourer, Transferee under Instrument of Transfer No. D720722 is now the proprietor of an Estate in Fee Simple, subject nevertheless to the exceptions and reservations if any contained in the Grant hereinafter referred to and also subject to such encumbrances liens and interests as are notified hereon in That piece of land situated in the Municipality of Bankstown Parish of Bankstown and County of Cumberland containing Two rods or thereabouts as shown in the plan hereon and therein edged red being Lot B in plan annexed to the said Instrument of Transfer No. D720722 and being part of 60 acres (Portion 7 of Parish) originally granted to Daniel Cooper by Crown Grant dated the 14th day of April 1831.

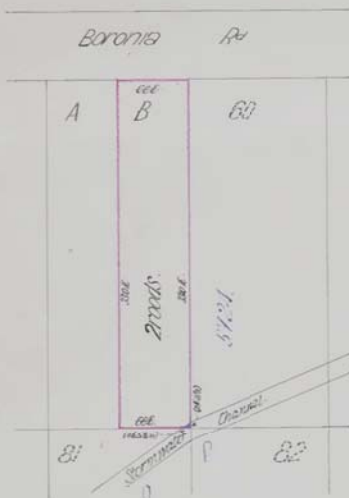
In witness whereof I have hereunto signed my name and affixed my Seal, this Twentieth day of February 1948

Signed in the presence of

J. Keeshaw

J. Wells

Registrar General



The abovesaid registered proprietor holds subject to the provisions of section 604 of the Local Government Act, 1915.

J. Wells
 Registrar General

No. D720723 MORTGAGE dated 5th August 1947
 from the said Ronald Martin Williamson to R.S.S. Bankstown Sub-branch of the Bankstown Building Society No. 2 Limited
 Produced and entered 10th September 1947 and entered 5th March 1948
 at 12 o'clock in the noon
J. Wells
 REGISTRAR GENERAL.

No. D88569 DISCHARGE of which mortgage No. D720723 dated 5th September 1948
 Produced and entered 10th September 1948
 at 12 o'clock in the after noon.
J. Wells
 REGISTRAR GENERAL.

No. D88570 MORTGAGE dated 20th August 1948
 from the said Ronald Martin Williamson to R.S.S. Bankstown Sub-branch of the Bankstown Building Society No. 2 Limited
 Produced and entered 6th September 1948
 at 12 o'clock in the after noon.
J. Wells
 REGISTRAR GENERAL.

NOTIFICATION REFERRED TO
 Instrument of Transfer No. A19687 comprising Lot 61 in Deposited Plan No. 5724 of which the land above described forms part contains conditions that any building erected on the land above described shall be of a value of not less than One hundred pounds (£100) and that on the erection of any such building the said land shall be fenced.

J. Wells
 REGISTRAR GENERAL.

No. C635515 Resumption of Easement in favour of Minister for Public Works over the piece of land colored blue in the plan hereon.

J. Wells
 REGISTRAR GENERAL.

No. F898692 DISCHARGE within mortgage
No. 3888570 dated 9th July 1952
Produced and entered 17th July 1952
at 4.00 o'clock in the after noon.
J. H. Pells
REGISTRAR GENERAL

No. F898693 TRANSFER dated 17th July 1952
from the said Ronald Clayton Williamson to Rose
Singer of East Bankstown, Married Woman
of the land within described
Produced and entered 17th July 1952
at 4.00 o'clock in the after noon.
J. H. Pells
REGISTRAR GENERAL

No. F898693 TRANSFER dated 1st June 1953
from the said Rose Singer to Edward William Dutt of
Bankstown, Carriage Contractor
of the land within described
Produced and entered 24 June 1953
at 10.00 o'clock in the fore noon.
J. H. Pells
REGISTRAR GENERAL

No. F898693 MORTGAGE dated 30th May 1953
from the said Edward William Dutt to Australia and
New Zealand Bank Limited
Produced and entered 24 June 1953
at 10.00 o'clock in the fore noon.
J. H. Pells
REGISTRAR GENERAL

Interests created pursuant to Section 88B Conveyancing Act, 1919,
by the registration of Deposited Plan 236854. See L 167019
Entered 5/9/1968.

Jawatson
REGISTRAR GENERAL

MORTGAGE No. F898693 has been discharged.
as regards part of Lot 12 in DP 236854.
See L166207 Entered 17th November 1968.
Jawatson
REGISTRAR GENERAL

Banking Structures Pty. Limited is
now the registered proprietor of the land described,
being part of Lot 12 in DP 236854.
See TRANSFER No. L166208 dated 13th August 1968.
Entered 17th November 1968.
Jawatson
REGISTRAR GENERAL

The interest of the Council of the Municipality of
Bankstown in the new road shown on
D. P. 238217
Entered 19/11/1969
Jawatson
REGISTRAR GENERAL

Interests created pursuant to Section 88B Conveyancing Act, 1919,
by the registration of Deposited Plan 238217 See L653923
Entered 19-11-1969

Jawatson
REGISTRAR GENERAL

This deed is cancelled as to part
New Certificates of Title have issued on 8-12-1969
for lots in Deposited Plan No. 236854 as follows:-
Lots 1 to 11 (incl) Vol. 11204 Fol. 234233 (incl) respectively.

Jawatson
REGISTRAR GENERAL

This deed is cancelled as to residue loc. road
New Certificates of Title have issued on 8-12-1969
for lots in Deposited Plan No. 238217 as follows:-
Lots 1 to 15 (incl) Vol. 11204 Fol. 234233 (incl) respectively.

Jawatson
REGISTRAR GENERAL

12.6.68
CT 7/6/68
DP 236854
L166207
L166208
L166209
L166210
L166211
L166212
L166213
L166214
L166215
L166216
L166217
L166218
L166219
L166220
L166221
L166222
L166223
L166224
L166225
L166226
L166227
L166228
L166229
L166230
L166231
L166232
L166233
L166234
L166235
L166236
L166237
L166238
L166239
L166240
L166241
L166242
L166243
L166244
L166245
L166246
L166247
L166248
L166249
L166250
L166251
L166252
L166253
L166254
L166255
L166256
L166257
L166258
L166259
L166260
L166261
L166262
L166263
L166264
L166265
L166266
L166267
L166268
L166269
L166270
L166271
L166272
L166273
L166274
L166275
L166276
L166277
L166278
L166279
L166280
L166281
L166282
L166283
L166284
L166285
L166286
L166287
L166288
L166289
L166290
L166291
L166292
L166293
L166294
L166295
L166296
L166297
L166298
L166299
L166300
L166301
L166302
L166303
L166304
L166305
L166306
L166307
L166308
L166309
L166310
L166311
L166312
L166313
L166314
L166315
L166316
L166317
L166318
L166319
L166320
L166321
L166322
L166323
L166324
L166325
L166326
L166327
L166328
L166329
L166330
L166331
L166332
L166333
L166334
L166335
L166336
L166337
L166338
L166339
L166340
L166341
L166342
L166343
L166344
L166345
L166346
L166347
L166348
L166349
L166350
L166351
L166352
L166353
L166354
L166355
L166356
L166357
L166358
L166359
L166360
L166361
L166362
L166363
L166364
L166365
L166366
L166367
L166368
L166369
L166370
L166371
L166372
L166373
L166374
L166375
L166376
L166377
L166378
L166379
L166380
L166381
L166382
L166383
L166384
L166385
L166386
L166387
L166388
L166389
L166390
L166391
L166392
L166393
L166394
L166395
L166396
L166397
L166398
L166399
L166400
L166401
L166402
L166403
L166404
L166405
L166406
L166407
L166408
L166409
L166410
L166411
L166412
L166413
L166414
L166415
L166416
L166417
L166418
L166419
L166420
L166421
L166422
L166423
L166424
L166425
L166426
L166427
L166428
L166429
L166430
L166431
L166432
L166433
L166434
L166435
L166436
L166437
L166438
L166439
L166440
L166441
L166442
L166443
L166444
L166445
L166446
L166447
L166448
L166449
L166450
L166451
L166452
L166453
L166454
L166455
L166456
L166457
L166458
L166459
L166460
L166461
L166462
L166463
L166464
L166465
L166466
L166467
L166468
L166469
L166470
L166471
L166472
L166473
L166474
L166475
L166476
L166477
L166478
L166479
L166480
L166481
L166482
L166483
L166484
L166485
L166486
L166487
L166488
L166489
L166490
L166491
L166492
L166493
L166494
L166495
L166496
L166497
L166498
L166499
L166500
L166501
L166502
L166503
L166504
L166505
L166506
L166507
L166508
L166509
L166510
L166511
L166512
L166513
L166514
L166515
L166516
L166517
L166518
L166519
L166520
L166521
L166522
L166523
L166524
L166525
L166526
L166527
L166528
L166529
L166530
L166531
L166532
L166533
L166534
L166535
L166536
L166537
L166538
L166539
L166540
L166541
L166542
L166543
L166544
L166545
L166546
L166547
L166548
L166549
L166550
L166551
L166552
L166553
L166554
L166555
L166556
L166557
L166558
L166559
L166560
L166561
L166562
L166563
L166564
L166565
L166566
L166567
L166568
L166569
L166570
L166571
L166572
L166573
L166574
L166575
L166576
L166577
L166578
L166579
L166580
L166581
L166582
L166583
L166584
L166585
L166586
L166587
L166588
L166589
L166590
L166591
L166592
L166593
L166594
L166595
L166596
L166597
L166598
L166599
L166600
L166601
L166602
L166603
L166604
L166605
L166606
L166607
L166608
L166609
L166610
L166611
L166612
L166613
L166614
L166615
L166616
L166617
L166618
L166619
L166620
L166621
L166622
L166623
L166624
L166625
L166626
L166627
L166628
L166629
L166630
L166631
L166632
L166633
L166634
L166635
L166636
L166637
L166638
L166639
L166640
L166641
L166642
L166643
L166644
L166645
L166646
L166647
L166648
L166649
L166650
L166651
L166652
L166653
L166654
L166655
L166656
L166657
L166658
L166659
L166660
L166661
L166662
L166663
L166664
L166665
L166666
L166667
L166668
L166669
L166670
L166671
L166672
L166673
L166674
L166675
L166676
L166677
L166678
L166679
L166680
L166681
L166682
L166683
L166684
L166685
L166686
L166687
L166688
L166689
L166690
L166691
L166692
L166693
L166694
L166695
L166696
L166697
L166698
L166699
L166700
L166701
L166702
L166703
L166704
L166705
L166706
L166707
L166708
L166709
L166710
L166711
L166712
L166713
L166714
L166715
L166716
L166717
L166718
L166719
L166720
L166721
L166722
L166723
L166724
L166725
L166726
L166727
L166728
L166729
L166730
L166731
L166732
L166733
L166734
L166735
L166736
L166737
L166738
L166739
L166740
L166741
L166742
L166743
L166744
L166745
L166746
L166747
L166748
L166749
L166750
L166751
L166752
L166753
L166754
L166755
L166756
L166757
L166758
L166759
L166760
L166761
L166762
L166763
L166764
L166765
L166766
L166767
L166768
L166769
L166770
L166771
L166772
L166773
L166774
L166775
L166776
L166777
L166778
L166779
L166780
L166781
L166782
L166783
L166784
L166785
L166786
L166787
L166788
L166789
L166790
L166791
L166792
L166793
L166794
L166795
L166796
L166797
L166798
L166799
L166800
L166801
L166802
L166803
L166804
L166805
L166806
L166807
L166808
L166809
L166810
L166811
L166812
L166813
L166814
L166815
L166816
L166817
L166818
L166819
L166820
L166821
L166822
L166823
L166824
L166825
L166826
L166827
L166828
L166829
L166830
L166831
L166832
L166833
L166834
L166835
L166836
L166837
L166838
L166839
L166840
L166841
L166842
L166843
L166844
L166845
L166846
L166847
L166848
L166849
L166850
L166851
L166852
L166853
L166854
L166855
L166856
L166857
L166858
L166859
L166860
L166861
L166862
L166863
L166864
L166865
L166866
L166867
L166868
L166869
L166870
L166871
L166872
L166873
L166874
L166875
L166876
L166877
L166878
L166879
L166880
L166881
L166882
L166883
L166884
L166885
L166886
L166887
L166888
L166889
L166890
L166891
L166892
L166893
L166894
L166895
L166896
L166897
L166898
L166899
L166900
L166901
L166902
L166903
L166904
L166905
L166906
L166907
L166908
L166909
L166910
L166911
L166912
L166913
L166914
L166915
L166916
L166917
L166918
L166919
L166920
L166921
L166922
L166923
L166924
L166925
L166926
L166927
L166928
L166929
L166930
L166931
L166932
L166933
L166934
L166935
L166936
L166937
L166938
L166939
L166940
L166941
L166942
L166943
L166944
L166945
L166946
L166947
L166948
L166949
L166950
L166951
L166952
L166953
L166954
L166955
L166956
L166957
L166958
L166959
L166960
L166961
L166962
L166963
L166964
L166965
L166966
L166967
L166968
L166969
L166970
L166971
L166972
L166973
L166974
L166975
L166976
L166977
L166978
L166979
L166980
L166981
L166982
L166983
L166984
L166985
L166986
L166987
L166988
L166989
L166990
L166991
L166992
L166993
L166994
L166995
L166996
L166997
L166998
L166999
L167000
L167001
L167002
L167003
L167004
L167005
L167006
L167007
L167008
L167009
L167010
L167011
L167012
L167013
L167014
L167015
L167016
L1670

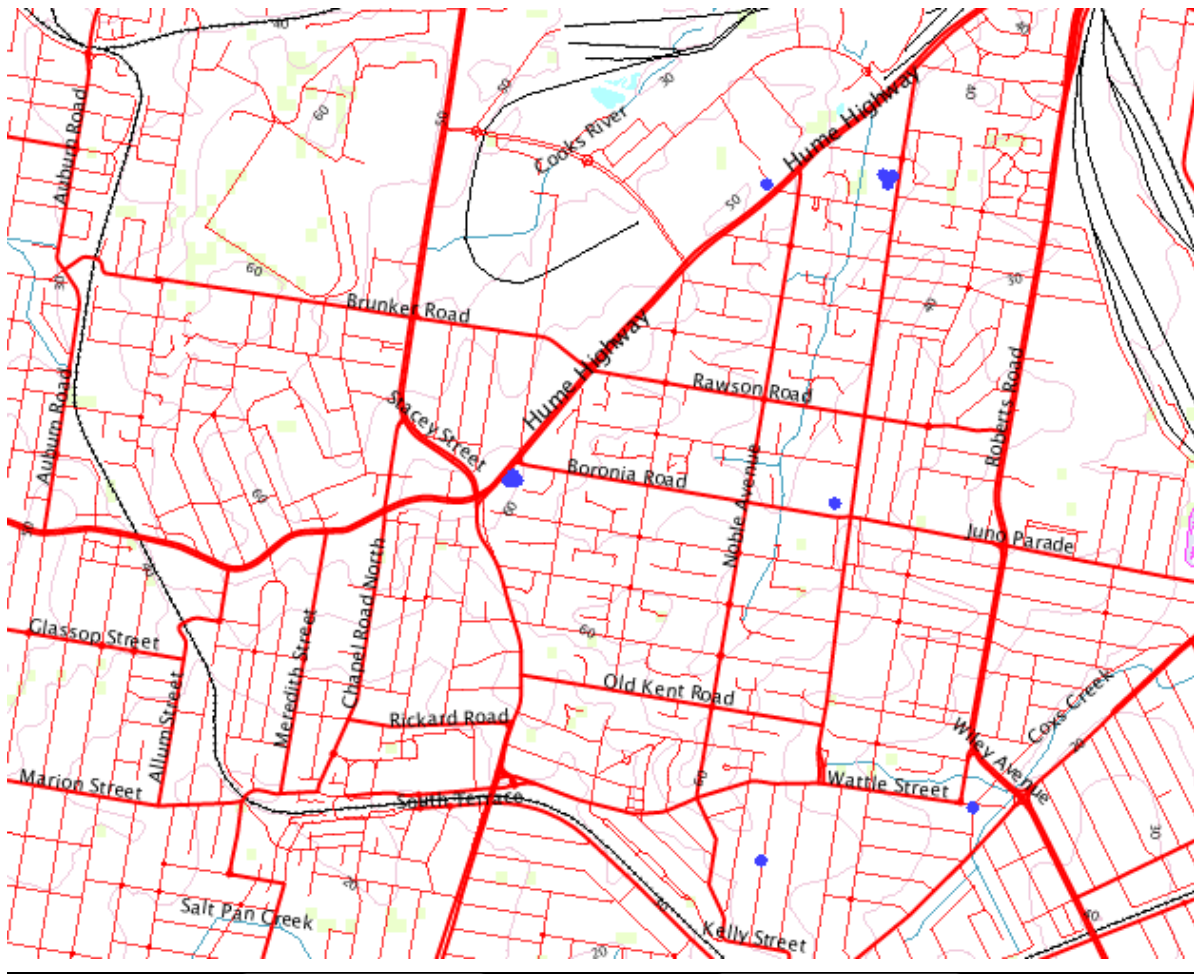
Appendix G

Groundwater Works Database Search

Greenacre Groundwater Bore Search

Map created with NSW Natural Resource Atlas - <http://www.nratlas.nsw.gov.au>

Thursday, April 04, 2013



0

4 Km

Legend

Symbol	Layer	Custodian
	Cities and large towns	renderImage: Cannot build image from features
	Populated places	renderImage: Cannot build image from features
	Towns	
	Groundwater Bores	
	Catchment Management Authority boundaries	
	Major rivers	
	Primary/arterial road	
	Motorway/freeway	
	Railway	
	Runway	
	Contour	
	Background	
	Topographic base map	

Copyright © 2013 New South Wales Government. Map has been compiled from various sources and may contain errors or omissions. No representation is made as to its accuracy or suitability.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW103519

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW103519
LIC-NUM	10BL159972
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Auger
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	2000-07-10
FINAL-DEPTH (metres)	3.50
DRILLED-DEPTH (metres)	3.50
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	AUST POST
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6248144.00
EASTING	319996.00
LATITUDE	33 53' 30"
LONGITUDE	151 3' 12"
GS-MAP	

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH LIBERTY PLAINS
PORTION-LOT-DP 1020//871836

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH LIBERTY PLAINS
PORTION-LOT-DP 1020 871836

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	3.50	50			Auger

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.00	2.00	Clay,moist,dark brown/grey		
2.00	3.50	1.50	Silt,dry, non plastic,becoming weathered shale		

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW105393

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW105393
LIC-NUM	10WA108549
AUTHORISED-PURPOSES	DOMESTIC
INTENDED-PURPOSES	DOMESTIC
WORK-TYPE	Bore
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	2003-07-25
FINAL-DEPTH (metres)	5.50
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	GEORGIOU
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6245004.00
EASTING	320926.00
LATITUDE	33 55' 13"
LONGITUDE	151 3' 46"
GS-MAP	

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH ST GEORGE
PORTION-LOT-DP 19 12834

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH ST GEORGE
PORTION-LOT-DP 19 12834

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	5.50	180			Hand Dug
1	1	Casing	Lining	0.00	0.00				

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW107854

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW107854
LIC-NUM	10WA108688
AUTHORISED-PURPOSES	DOMESTIC
INTENDED-PURPOSES	DOMESTIC
WORK-TYPE	Bore
WORK-STATUS	Supply Obtained
CONSTRUCTION-METHOD	Down Hole Hammer
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2004-04-23
FINAL-DEPTH (metres)	234.00
DRILLED-DEPTH (metres)	234.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	ASSOC OF ISLAMIC DE ' WAH
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	36.00
SALINITY	8750.00
YIELD	0.20

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	213 - SYDNEY COAST - GEORGES RIVER
AREA-DISTRICT	
CMA-MAP	9130-3S
GRID-ZONE	56/1
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6244718.00
EASTING	320037.00
LATITUDE	33 55' 21"
LONGITUDE	151 3' 11"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE GIS - Geographic Information System
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP A//313700

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP A 313700

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	2.30	210			Rotary Air
1		Hole	Hole	2.30	150.50	165			Down Hole Hammer
1		Hole	Hole	150.50	234.50	155			Down Hole Hammer
1	1	Casing	Steel	-0.60	2.20	168.3			Driven into Hole; Open End
1	1	Casing	PVC Class 9	-0.60	29.40	140			Screwed and Glued; Suspended in Clamps
1		Annulus	Concrete	-0.10	2.20	210			

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W- L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
101.00	102.00	1.00				0.05			9500.00
122.00	124.50	2.50				0.05			9500.00
186.50	193.00	6.50				0.10			8750.00

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	1.50	1.50	clay, brown		
1.50	14.00	12.50	shale, brown		

14.00	21.00	7.00	shale, grey
21.00	21.50	0.50	shale, hard
21.50	24.00	2.50	dolerite, very hard
24.00	77.50	53.50	shale, hard
77.50	101.00	23.50	sandstone, grey
101.00	102.00	1.00	sandstone, fine quartz
102.00	122.00	20.00	sandstone, grey
122.00	124.50	2.50	sandstone fine quartz
124.50	133.50	9.00	sandstone, grey
133.50	138.00	4.50	sandstone, dark grey
138.00	180.00	42.00	sandstone, grey
180.00	186.50	6.50	sandstone, light grey siltstone grey
186.50	193.00	6.50	sandstone, light grey, & quartz, water bearing
193.00	207.50	14.50	sandstone, light grey
207.50	234.00	26.50	sandstone, light grey light brown

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109734

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW109734
LIC-NUM	10BL162770
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2003-11-03
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	4.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	MOBIL OIL
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.80
SALINITY	1120.00
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6246624.00
EASTING	318933.00
LATITUDE	33 54' 19"
LONGITUDE	151 2' 30"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 1 575922

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	P.V.C.	0.00	1.00	60.2			Screwed
1	1	Opening	Screen	1.00	4.00	60.2			PVC; Screwed
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded; GS: .5- 4mm

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.20	0.20	CONCRETE		
0.20	2.40	2.20	FILL		
2.40	4.00	1.60	CLAY		

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109735

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW109735
LIC-NUM	10BL162770
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2003-12-04
FINAL-DEPTH (metres)	11.00
DRILLED-DEPTH (metres)	11.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	MOBIL OIL
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	9.10
SALINITY	10.36
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6246624.00
EASTING	318969.00
LATITUDE	33 54' 19"
LONGITUDE	151 2' 31"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 1 575922

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	11.00	100			
1	1	Casing	PVC Class 18	0.00	6.30	50	49		
1	1	Opening	Screen	6.20	11.00	50			PVC
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded; GS: 6- 11mm

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.15	0.15	CONCRETE		
0.15	2.10	1.95	FILL		
2.10	4.30	2.20	CLAY		
4.30	11.00	6.70	SHALE		

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW111476

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW111476
LIC-NUM	10BL604594
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	Equipped - bore used for obs
CONSTRUCTION-METHOD	Auger - Solid Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2011-04-14
FINAL-DEPTH (metres)	11.00
DRILLED-DEPTH (metres)	11.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	COLES GROUP PROPERTY
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	3.50
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6246534.00
EASTING	320314.00
LATITUDE	33 54' 23"
LONGITUDE	151 3' 23"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 3//14864

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 3 14864

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	11.00	125			Auger - Solid Flight
1	1	Casing	PVC Class 18	0.00	2.00	60	50		
1	1	Opening	Slots - Horizontal	2.00	11.00	60			PVC Class 18; Casing - Machine Slotted; SL: 30mm; A: 5mm; Screwed
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded; GS: 2- 5mm

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
3.50	11.00	7.50		3.50					

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	1.50	1.50	SHALE ORANGE BROWN,AND GREY		
1.50	11.00	9.50	SHALE,LIGHT BROWN TO GREY		

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW111489

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW111489
LIC-NUM	10BL604479
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	Equipped - bore used for obs
CONSTRUCTION-METHOD	Auger - Solid Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2011-02-07
FINAL-DEPTH (metres)	5.80
DRILLED-DEPTH (metres)	5.80
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	SYDNEY HOLDINGS P / L
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	5.20
SALINITY	843.00
YIELD	0.10

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6248202.00
EASTING	320489.00
LATITUDE	33 53' 29"
LONGITUDE	151 3' 32"
GS-MAP	

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 500//1161478

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 241656

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	5.80				Auger - Solid Flight
1	1	Casing	PVC Class 18	0.80	2.80	50	46		Screwed; Cemented; Open End
1	1	Opening	Slots - Horizontal	2.80	5.80	50			PVC Class 18; Casing - Machine Slotted; Screwed
1		Annulus	Bentonite/Grout	1.00	2.00				
1		Annulus	Waterworn/Rounded	2.00	2.80				Graded; GS: 0- 2mm

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
5.00	5.80	0.80		5.20		0.10			

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.20	0.20	FILL,CONCRETE CORE		
0.20	0.50	0.30	CLAY RED/GREY , MOIST,PLASTIC		
0.50	0.70	0.20	SAND MOIST,M/GRAINED,GRAVELS		

0.70	1.30	0.60	CLAY BROWN MOTTLED.MOIST.PLASTIC
1.30	2.60	1.30	CLAY RED DRY,MINOR PLASTICITY
2.60	3.40	0.80	CLAY RED,DRY,NON PLASTIC
3.40	5.80	2.40	SHALE BROWN/GREY,DRY,WEATHERED

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW111490

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW111490
LIC-NUM	10BL604479
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	Equipped - bore used for obs
CONSTRUCTION-METHOD	Auger - Solid Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2011-02-07
FINAL-DEPTH (metres)	6.00
DRILLED-DEPTH (metres)	6.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	SYDNEY HOLDINGS P / L
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	5.11
SALINITY	970.00
YIELD	0.20

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6248196.00
EASTING	320527.00
LATITUDE	33 53' 29"
LONGITUDE	151 3' 33"
GS-MAP	

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 500//1161478

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 241656

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	6.00				Auger - Solid Flight
1	1	Casing	PVC Class 18	0.00	3.00	50			Screwed; Cemented; Open End
1	1	Opening	Slots - Horizontal	3.00	6.00	50			PVC Class 18; Casing - Machine Slotted; Screwed
1		Annulus	Bentonite/Grout	1.50	2.50				
1		Annulus	Waterworn/Rounded	2.50	6.00				Graded; GS: 0- 2mm

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
5.00	6.00	1.00		5.11		0.20			

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.20	0.20	FILL CONCRETE CORE		
0.20	0.70	0.50	CLAY RED MOIST,GREY MOTTLES.PLASTIC		
0.70	1.30	0.60	CLAY NATURAL.MOIST,BROWN,PLASTIC		

1.30	2.10	0.80	CLAY RED DRY,MINOR PLASTICITY
2.10	2.80	0.70	CLAY GREY DRY HARD NON PLASTIC
2.80	3.50	0.70	CLAY GREY DRY HARD NON PLASTIC
3.50	6.00	2.50	SHALE WEATHERED,BROWN,DRY

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW111491

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW111491
LIC-NUM	10BL604479
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	Equipped - bore used for obs
CONSTRUCTION-METHOD	Auger - Solid Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2011-02-07
FINAL-DEPTH (metres)	6.00
DRILLED-DEPTH (metres)	6.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	SYDNEY HOLDINGS P / L
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	3.97
SALINITY	1045.00
YIELD	0.10

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6248158.00
EASTING	320507.00
LATITUDE	33 53' 30"
LONGITUDE	151 3' 32"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 500//1161478

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH BANKSTOWN
 PORTION-LOT-DP 1 241656

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	6.00				Auger - Solid Flight
1	1	Casing	PVC Class 18	0.00	3.00	50	46		Screwed; Cemented; Open End
1	1	Opening	Slots - Horizontal	3.00	6.00	50			PVC Class 18; Casing - Machine Slotted; Screwed
1		Annulus	Bentonite/Grout	1.50	2.50				
1		Annulus	Waterworn/Rounded	2.50	3.00				Graded; GS: 0- 2mm

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
5.00	6.00	1.00		3.97		0.10			

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO- MATERIAL	COMMENT
0.00	0.20	0.20	FILL,CONCRETE CORE		
0.20	0.70	0.50	CLAY RED MOIST,GREY MOTTLES,PLASTIC		

0.70	1.30	0.60	CLAY NATURAL MOIST,BROWN,PLASTIC
1.30	2.10	0.80	CLAY RED DRY MINOR PLASTICITY
2.10	2.80	0.70	CLAY GREY DRY.HARD,NON PLASTIC
2.80	3.50	0.70	CLAY GREY DRY,HARD,NON PLASTIC.ORANGE MOTTLES
3.50	6.00	2.50	SHALE WEATHERED,BROWN,DRY,BECOMING GREY AND WET

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW112130

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW112130
LIC-NUM 10BL161854
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS
CONSTRUCTION-METHOD
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2003-01-28
FINAL-DEPTH (metres) 10.50
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY 7-ELEVEN
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6246623.00
EASTING 318932.00
LATITUDE 33 54' 19"
LONGITUDE 151 2' 30"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)

Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW112131

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW112131
LIC-NUM 10BL161854
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS
CONSTRUCTION-METHOD
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2003-01-28
FINAL-DEPTH (metres) 13.00
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY 7-ELEVEN
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6246623.00
EASTING 318968.00
LATITUDE 33 54' 19"
LONGITUDE 151 2' 31"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW112132

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW112132
LIC-NUM 10BL161854
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Well
WORK-STATUS
CONSTRUCTION-METHOD
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2013-04-02
FINAL-DEPTH (metres) 10.00
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY 7-ELEVEN
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6246645.00
EASTING 318958.00
LATITUDE 33 54' 18"
LONGITUDE 151 2' 31"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW112133

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW112133
LIC-NUM	10BL161854
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2003-01-29
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	7-ELEVEN
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6246625.00
EASTING	318963.00
LATITUDE	33 54' 19"
LONGITUDE	151 2' 31"
GS-MAP	

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW112134

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW112134
LIC-NUM	10BL161854
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2003-01-29
FINAL-DEPTH (metres)	3.70
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	7-ELEVEN
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6246619.00
EASTING	318958.00
LATITUDE	33 54' 19"
LONGITUDE	151 2' 31"
GS-MAP	

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW112135

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW112135
LIC-NUM 10BL161854
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Well
WORK-STATUS
CONSTRUCTION-METHOD
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2001-11-28
FINAL-DEPTH (metres) 4.50
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY 7-ELEVEN
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6246635.00
EASTING 318961.00
LATITUDE 33 54' 19"
LONGITUDE 151 2' 31"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Thursday, April 4, 2013

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW112136

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW112136
LIC-NUM	10BL161854
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2003-01-30
FINAL-DEPTH (metres)	13.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	7-ELEVEN
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6246651.00
EASTING	318953.00
LATITUDE	33 54' 18"
LONGITUDE	151 2' 31"
GS-MAP	

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1//575922

Licensed [\(top\)](#)

COUNTY CUMBERLAND
PARISH BANKSTOWN
PORTION-LOT-DP 1 575922

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Appendix H

Bore Logs



DLA Environmental

Soil Profile Log

Borehole No. 1

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? ☒ No ☐ Yes	
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13			
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13			
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne			
Drill Model:		Truck Mounted Drill Rig		90° Bore Size: -	

Method	Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture	Sampling	Field Records/Comments	Monitoring well Details
	0.3			Silty Sandy Fill			TP1 (0.3)	
	1.3			Natural heavy light brown clay			TP1 (0.7)	
				End of Log - Terminated				

DLA Environmental

Soil Profile Log

Borehole No. 2

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? No Yes					
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13							
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13							
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne							
Drill Model: Truck Mounted Drill Rig		90° Bore Size: -							
Method	Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture	Sampling	Field Records/Comments	Monitoring well Details	
	0.5			Grey Silty Sandy Fill		TP2 (0.3)			
	1						Moisture @ 0.8m		
							TP2 (1.2)	Hydrocarbon odour @ 1.2m	
	2						TP2 (1.8)		
	2.5			Natural heavy grey / light brown clays					
	2.8						TP2 (3)		
	3.0			End of Log - Terminated					



CLIENT:	George Valiotis	JOB NUMBER:	DL3184	Monitoring Well Present? No Yes
PROJECT:	McFarlane Street Carpark	COMMENCED:	11/10/13	
LOCATION:	144 Boronia Road	COMPLETED:	11/10/13	
CONTRACTOR:	Ground Technologies	LOGGED BY:	Ed Milne	
Drill Model:	Truck Mounted Drill Rig	90°	Bore Size: -	

Sheet 1 of 1

DLA Environmental

Soil Profile Log

Borehole No. 4

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? ☒ No ☐ Yes	
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13			
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13			
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne			
Drill Model: Truck Mounted Drill Rig		90°		Bore Size: -	

Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture	Sampling	Field Records/Comments	Monitoring well Details
0.2			Concrete				
0.45			Black grey silty sandy fill			TP4 (0.4)	
			Brown Clays			TP4 (0.6)	
0.8			Natural heavy grey / light brown clays				
1.5			End of Log - Terminated				

DLA Environmental

Soil Profile Log

Borehole No. 5

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? No Yes				
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13						
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13						
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne						
Drill Model: Truck Mounted Drill Rig		90° Bore Size: -						
Method	Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture	Sampling	Field Records/Comments	Monitoring well Details
	0.6			Silty Sandy Fill			TP5 (0.2)	
							TP5 (0.5)	
	1.3			Natural heavy grey/brown clay			TP5 (1.0)	
				End of Log - Terminated				

DLA Environmental

Soil Profile Log

Borehole No. 6

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? ☒ No ☐ Yes				
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13						
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13						
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne						
Drill Model: Truck Mounted Drill Rig 90° Bore Size: -								
Method	Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture	Sampling	Field Records/Comments	Monitoring well Details
	0.2			Light Brown Sandy Fill			TP6 (0.1)	
	0.6			Natural heavy grey/brown clay			TP6 (0.3)	
	1			End of Log - Terminated				

DLA Environmental

Soil Profile Log

Borehole No. 7

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? ☒ No ☐ Yes				
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13						
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13						
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne						
Drill Model: Truck Mounted Drill Rig 90° Bore Size: -								
Method	Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture	Sampling	Field Records/Comments	Monitoring well Details
	0.1			Brown Silty Grey Topsoil			TP7 (0.1)	
				Orange Brown Silty Clay			TP7 (0.3)	
	0.4			Heavy Orange Silty Clay			TP7 (0.4)	
	0.6			End of Log - Terminated				

Soil Profile Log

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? No Yes				
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13						
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13						
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne						
Drill Model: Truck Mounted Drill Rig		90° Bore Size: -						
Method	Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture	Sampling	Field Records/Comments	Monitoring well Details
	0.1			Black Grey Sandy Fill			TP8 (0.1)	
							TP8 (0.3)	
				Natural heavy brown clay				
	1			End of Log - Terminated				



DLA Environmental

Soil Profile Log

Borehole No. 9

CLIENT: George Valiotis		JOB NUMBER: DL3184		Monitoring Well Present? ☒ No ☐ Yes			
PROJECT: McFarlane Street Carpark		COMMENCED: 11/10/13					
LOCATION: 144 Boronia Road		COMPLETED: 11/10/13					
CONTRACTOR: Ground Technologies		LOGGED BY: Ed Milne					
Drill Model: Truck Mounted Drill Rig 90° Bore Size: -							
Method	Depth (m)	Graphic Log	USCS Classification	Material Description	Moisture Sampling	Field Records/Comments	Monitoring well Details
	0.1			Black Grey Silty Sandy Topsoil		TP9 (0.1)	
				Natural heavy red/brown clay		TP9 (0.5)	
	1.1			End of Log - Terminated			