Detailed Site Investigation
15 Anderson Street
Lilydale VIC 3140

Yarra Ranges Council

16 May 2016

Final

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Executive Summary

Prensa Pty Ltd (Prensa) was engaged by Yarra Ranges Council (Council) to conduct a Detailed Site Investigation (DSI) of the property located at 15 Anderson Street, Lilydale Victoria (the Site).

At the time of the DSI, the Site was occupied by Council municipal offices and Lilydale public library. Based on information provided by Council, it is understood that the existing Civic Space building and the Contact Centre and public amenities building located in the northern portion of the Site are proposed to be demolished to allow for the construction of a new single or two-level structure for municipal office use. Furthermore, it is also understood that the existing Anderson Street Main Building and adjoining Lilydale Library building are proposed to be fully refurbished in the future without changes to the existing structural footprint.

Council requested Prensa undertake a DSI and Geotechnical Investigation at the Site to infill data gaps in previous environmental assessment and geotechnical investigations undertaken at the Site and to identify the potential for contamination that could represent a potential health risk to construction workers and future users of the Site as a commercial facility.

Council also requested Prensa undertake an intrusive soil assessment and geotechnical investigation in the vicinity of the existing Anderson Street Main Building and Library to investigate slope instability and subsidence issues and to assess the potential for soil contamination in this portion of the Site.

The geotechnical investigation was undertaken by GeoAust Geotechnical Engineers Pty Ltd (GeoAust) in conjunction with the soil sampling component of the DSI. The geotechnical report is appended to this DSI report.

To satisfy Council requirements, the objectives of this DSI were to:

- Identify the potential for contamination to exist as a result of current and/or historical land use activities, which could represent a potential health risk to construction workers and future users of the Site based on the proposed commercial use of the Site;
- Confirm the soil classification for potential future offsite disposal purposes in accordance with relevant EPA guidelines; and
- Recommend any further assessment works or remediation works for any identified contaminated areas, if required.

<u>Current and Historic Land Uses</u>

Based on the site history review, the Site was originally vacant land (possibly used for agricultural/grazing purposes) before it was first developed as Yarra Ranges Council circa 1962. It is considered likely that the existing Municipal Offices (comprising the Anderson Street Main Building, Civic Space and Contact Centre/public amenities building) were constructed circa 1962. Additional buildings and structures were progressively added to the original building and by 1991 the layout of the permanent buildings was generally consistent with the current layout.

Surrounding historical land uses included vacant agricultural land to the south and west, with other areas comprising public open space, a quarry and residential properties.

Previous Environmental Assessment Works

A previous Soil Investigation in conjunction with a Geotechnical Site Investigation was completed at the Site by Connolly Environmental (Connolly) in 2011 for the purposes of characterising in-situ soils for off-site disposal purposes and providing foundation recommendations for a proposed new building in the northern portion of the Site. The Connolly (2011) assessment involved soil sampling from a total of ten (10) soil bores established within the northern portion of the Site and also targeting areas in the immediate vicinity of the Lilydale Library building.

The results of the Connolly (2011) soil investigation reported an isolated elevated concentration of total polycyclic aromatic hydrocarbons (total PAH) and elevated background concentrations of nickel and fluoride. The reported total PAH concentration was considered to be associated with asphalt fragments in the sample and not representative of contamination. Fill and natural soils on site were classified as 'Fill Material' in accordance with EPA Victoria Publication IWRG621 (2009) for off-site disposal purposes. Due to naturally elevated nickel and fluoride concentrations, Connolly noted that the soil 'should not be used for a sensitive use'.

Impact Upon Beneficial Uses

Analytical results from the current DSI and previous Connolly (2011) soil investigation were compared to relevant ecological and health-based criteria for the proposed ongoing commercial land use of the Site. The analytical results were reported to be less than the adopted investigation and screening levels for the protection of human health (including future construction/maintenance workers) in a commercial land use setting at the locations assessed.

Furthermore, the analytical results reported were less than the adopted ecological investigation and screening levels for commercial land use at the locations assessed, with the exception of manganese reported in two (2) near surface samples. Due to the presence of basaltic gravels and crushed rock (road base) noted within the surface of BH4 and BH10, the elevated concentrations of manganese were considered likely to be representative of inherently raised concentrations associated with the basaltic gravels and not representative of contamination. Based on the current and proposed ongoing commercial use of the Site, it is considered unlikely that the reported manganese concentrations will pose a significant ecological risk to the highly modified ecosystems present onsite.

Reported pH, sulphate and chloride concentrations were below levels considered to be potentially aggressive towards concrete and/or steel structures at the locations assessed.

Fill and natural soils at the locations assessed are not considered to represent an aesthetic concern to the ongoing commercial use of the Site.

Off-Site Disposal Classification

Analytical results reported (by Prensa and Connolly) identified analyte concentrations less than the 'Fill Material' threshold criteria in accordance with EPA Victoria Publication IWRG621 (2009) guidelines, with the exception of total PAH, nickel and fluoride.

A single elevated total PAH concentration was reported during the previous Connolly (2011) assessment which was considered by Connolly to be associated with asphalt fragments within the collected sample and not representative of contamination.

Similarly raised concentrations of nickel were reported in near-surface soil during the Prensa assessment and are considered associated with the presence of basaltic gravels within the soil profile.

Elevated fluoride reported in natural soil during the previous Connolly (2011) assessment was considered to be associated with naturally occurring concentrations.

Based on the analytical results, the fill and natural soils within the areas assessed are classified as Fill Material for off-site disposal purposes.

This classification allows for a total volume of up to 5,000 m^3 of soil generated during future construction, refurbishment and/or maintenance works on the Site to be disposed off-site in accordance with EPA Industrial Waste Resource Guidelines. Should additional soil volumes require off-site disposal, further sampling and analysis may be required.

Additional Assessment and/or Remediation

The findings of this DSI suggest that it is not considered necessary for further assessment and/or remediation to be undertaken at the Site.

Recommendations

Based on the above findings the following recommendation has been provided:

- The presence of existing buildings on the Site prevented assessment of subsurface conditions across the Site. Should subsurface conditions inconsistent with those described in this report be encountered during future construction, refurbishment and/or maintenance works at the Site, advice should be sought from an environmental consultant.

Statement of Limitations

This document has been prepared in response to specific instructions from Yarra Ranges Council to whom the report has been addressed. The work has been undertaken with the usual care and thoroughness of the consulting profession. This document is privileged and confidential and has been prepared for the purposes of legal advice and anticipated legal proceedings. The work is based on generally accepted standards, practices of the time the work was undertaken. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The report has been prepared for the use by Yarra Ranges Council and the use of this report by other parties may lead to misinterpretation of the issues contained in this report. To avoid misuse of this report, Prensa advise that the report should only be relied upon by Yarra Ranges Council and those parties expressly referred to in the introduction of the report. The report should not be separated or reproduced in part and Prensa should be retained to assist other professionals who may be affected by the issues addressed in this report to ensure the report is not misused in any way.

Prensa is not a professional quantity surveyor (QS) organisation. Any areas, volumes, tonnages or any other quantities noted in this report are indicative estimates only. The services of a professional QS organisation should be engaged if quantities are to be relied upon.

Sampling Risks

Prensa acknowledges that any scientifically designed sampling program cannot guarantee all sub-surface contamination will be detected. Sampling programs are designed based on known or suspected site conditions and the extent and nature of the sampling and analytical programs will be designed to achieve a level of confidence in the detection of known or suspected subsurface contamination. The sampling and analytical programs adopted will be those that maximises the probability of identifying contaminants. Yarra Ranges Council must therefore accept a level of risk associated with the possible failure to detect certain sub-surface contamination where the sampling and analytical program misses such contamination. Prensa will detail the nature and extent of the sampling and analytical program used in the investigation in the investigation report provided.

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Soil contamination can be expected to be non-homogeneous across the stratified soils where present on site, and the concentrations of contaminants may vary significantly within areas where contamination has occurred. In addition, the migration of contaminants through groundwater and soils may follow preferential pathways, such as areas of higher permeability, which may not be intersected by sampling events. Subsurface conditions including contaminant concentrations can also change over time. For this reason, the results should be regarded as representative only.

Yarra Ranges Council recognises that sampling of subsurface conditions may result in some cross contamination. All care will be taken and the industry standards used to minimise the risk of such cross contamination occurring, however, Yarra Ranges Council recognises this risk and waives any claims against Prensa and agrees to defend, indemnify and hold Prensa harmless from any claims or liability for injury or loss which may arise as a result of alleged cross contamination caused by sampling.

Reliance on Information Provided by Others

Prensa notes that where information has been provided by other parties in order for the works to be undertaken, Prensa cannot guarantee the accuracy or completeness of this information. Yarra Ranges Council therefore waives any claim against the company and agrees to indemnify Prensa for any loss, claim or liability arising from inaccuracies or omissions in information provided to Prensa by third parties. No indications were found during our investigations that information contained in this report, as provided to Prensa, is false.

Recommendations for Further Study

The industry recognised methods used in undertaking the works may dictate a staged approach to specific investigations. The findings therefore of this report may represent preliminary findings in accordance with these industry recognised methodologies. In accordance with these methodologies, recommendations contained in this report may include a need for further investigation or analytical analysis. The decision to accept these recommendations and incur additional costs in doing so will be at the sole discretion of Yarra Ranges Council and Prensa recognises that that Yarra Ranges Council will consider their specific needs and the business risks involved. Prensa does not accept any liability for losses incurred as a result of Yarra Ranges Council not accepting the recommendations made within this report.

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1 Introduction

Prensa Pty Ltd (Prensa) was engaged by Yarra Ranges Council (Council) to conduct a Detailed Site Investigation (DSI) of the property located at 15 Anderson Street, Lilydale Victoria (the Site).

2 Background

The Site was located at 15 Anderson Street, Lilydale and was occupied by Council municipal offices and Lilydale public library. Based on the information provided by Council, it is understood that the existing Civic Space building and the Contact Centre and public amenities building located in the northern portion of the Site are proposed to be demolished in the future to allow for the construction of a new single or two-level structure for municipal office use. Whilst architectural plans of the proposed development are currently not available, it is understood that the footprint of the new building will cover an approximate ground floor plan area of 3,000 m^2. The proposed development is unlikely to include basement levels.

It is also understood that the existing Anderson Street Main Building and adjoining Lilydale Library are proposed to be fully refurbished in the future without changes to the existing structural footprint.

The location of the Site and layout of existing buildings is provided in Figures 1 and 2 in the 'Figures' section of this report.

Connolly Environmental Pty Ltd (Connolly) previously completed a Soil Investigation at the Site in conjunction with a Geotechnical Site Investigation completed by HardRock Geotechnical Pty Ltd (Hardrock) in November/December 2011 for the purposes of characterising in-situ soils for off-site disposal purposes and providing foundation recommendations for a proposed new building in the northern portion of the Site. The Connolly (2011) assessment involved soil sampling from a total of ten (10) soil bores (B1-B10) established within the northern portion of the Site and also targeting the Lilydale Library building.

The results of the Connolly (2011) soil investigation reported an isolated elevated concentration of total polycyclic aromatic hydrocarbons (total PAH) and elevated background concentrations of nickel and fluoride in samples of fill or natural soil at the Site. The reported total PAH concentration was considered to be associated with asphalt fragments in the collected fill sample and not representative of contamination. Fill and natural soils on site were classified as 'Fill Material' in accordance with EPA Victoria Publication IWRG621 (2009) for offsite disposal purposes. Due to naturally elevated nickel and fluoride concentrations, Connolly noted that the soil 'should not be used for a sensitive use'.

Council requested Prensa undertake a Detailed Site Investigation (DSI) and Geotechnical Investigation at the Site to infill data gaps in the previous environmental assessment and geotechnical investigation and to identify the potential for contamination at the Site that could represent a potential health risk to construction workers and future users of the Site as a commercial facility.

Council also requested an intrusive soil assessment and geotechnical investigation be completed in the vicinity of the existing Anderson Street Main Building and Lilydale Library to investigate slope instability and subsidence issues and to assess the potential for soil contamination in this portion of the Site.

The geotechnical investigation was undertaken by GeoAust Geotechnical Engineers Pty Ltd (GeoAust) in conjunction with the environmental soil sampling component of the DSI. The geotechnical report is provided as Appendix N of this report.

3 Objective

The objectives of the DSI were to:

- Identify the potential for contamination to exist at the Site as a result of current and/or historical land use activities, which could represent a potential health risk to construction workers and future users of the Site based on the proposed ongoing commercial use of the Site;
- Confirm the soil classification for potential future offsite disposal purposes in accordance with relevant EPA guidelines; and
- Recommend any further assessment works or remediation works for any identified contaminated areas, if required.

Reference should be made to GeoAust fee proposal [Ref: *4548-3-Q*], dated 15 February 2016 for the scope and objectives of the geotechnical investigation.

4 Methodology

To complete the DSI, Prensa undertook the following scope of works:

- A desktop review of the following information sources:
  - ➢ Current planning property reports;
  - ➢ Publicly available topographical, geological and hydrogeological maps;
  - ➢ Visualising Victoria's Groundwater (VVG) online database;
  - ➢ Department of Environment, Land, Water & Planning (DELWP) - Groundwater Resource Reports;
  - ➢ Review of nearby Groundwater Quality Restricted Use Zones (GQRUZ);
  - ➢ Victorian EPA Priority Sites Register (PSR);
  - ➢ Review of publically available EPA environmental audit reports for nearby sites (within a 1 km radius of the Site);
  - ➢ General internet search; and
  - ➢ Review of previous soil investigation and geotechnical reports prepared by Connolly and Hardrock for the Site.
- A limited site history review utilising the following information sources:
  - ➢ Current and historical certificates of title;
  - ➢ Current and historical aerial photographs;
  - ➢ Information provided by Royal Historical Society of Victoria (RHSV);
  - ➢ Melbourne Metropolitan Board of Works (MMBW) plans or other available historic plans/maps.
- Site inspection;
- Project management of the Geotechnical Investigation, undertaken by a specialist consultant subcontracted by Prensa;
- Intrusive soil investigation, which included the following:
  - ➢ Preparation of a site-specific safety plan, including safe work method statements (SWMS);
  - ➢ Collection of soil samples from four (4) gridded borehole locations established in the northern portion of the Site (proposed construction zone of new building);

- ➢ Collection of soil samples from three (3) borehole locations established in the vicinity of the Anderson Street Main Building and Lilydale Library;
- ➢ Analysis of soil samples (including quality control samples) at a NATA accredited laboratory;
- ➢ Interpretation of the analytical results;
- ➢ Comparison of results against relevant investigation and screening levels based on the proposed land use setting; and

- Preparation of this DSI report.

5 Technical Framework

In completing the aforementioned tasks, Prensa undertook the works in general accordance with the following:

- State Environment Protection Policy (SEPP), *Prevention and Management of Contamination of Land*, 2002;
- *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, 1999 (April 2013), (NEPM 2013 Guidelines);
- Australian Standard (AS) 4482.1, *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-volatile and semi-volatile compounds*, 2005;
- Australian Standard (AS) 4482.2, *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances*, 1999;
- The Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE), Technical Report no. 10: *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater*, 2011;
- Victorian EPA Industrial Waste Resource Guidelines (IWRG621), *Soil Hazard Categorisation and Management*, June 2009;
- Victorian EPA Industrial Waste Resource Guidelines (IWRG701), *Sampling and Analysis of Waters, Wastewaters, Soils and Waste*, June 2009; and
- Victorian EPA Industrial Waste Resource Guidelines (IWRG702), *Soil Sampling*, June 2009.

6 Desktop Review

6.1 Site Location and Description

The Site is located at 15 Anderson Street, Lilydale, approximately 33 km north east of the Melbourne central business district (CBD).

A description of the Site has been provided in Table 1 on the following page.

Table 1: General Site Description

Site Address	15 Anderson Street, Lilydale, Victoria 3140 (Melway Ref: 38, F5)
Total Area of Site	Approximately 12,050 m^2 (1.2 hectares)
Title Identification	Lot 1 on Plan of Subdivision (PS) 546467D Certificate of title Volume 11222, Folio 059
Local Council	Yarra Ranges Council
Planning Zone	Public Use Zone – Local Government (PUZ6) Schedule to the Public Use Zone – Local Government
Planning Overlays	Land Subject to Inundation Overlay – (LSIO) Land Subject to Inundation Overlay Schedule (LSIO) Public Acquisition Overlay (PAO) Public Acquisition Overlay (PAO) 9 Schedule (PAO9)
Current Site Use	Yarra Ranges Council municipal offices and Lilydale Library.
Proposed Use	Ongoing commercial use as municipal offices and public library.
Proposed Development	A new single or two-level municipal building with a surface footprint of approximately 3,000 m^2 is proposed to be constructed within the footprint of the existing Civic Space and Contact Centre/public amenities buildings located in the northern portion of the Site. It is unlikely that the proposed development will include basement level/s. Detailed architectural plans of the proposed development were not available at the time of preparation of this report. Complete refurbishment of the existing Anderson Street Main Building and Lilydale public library is also proposed without substantive changes to the existing structural footprint.

A site locality plan has been provided as Figure 1 in the 'Figures' section of this report.

Planning Property Reports sourced from the Department of Transport, Planning and Local Infrastructure (DTPLI) for the Site are provided in Appendix A.

6.2 Surrounding Land Uses

Based on a review of available on-line information sources and a site inspection, the Site was noted to be surrounded by the following current features and/or land uses:

- **North:** Hardy Street (directly north), Country Fire Authority (CFA) station, car dealership (Alpha Romeo/Hyundai), car rental/dealership, vacant land, Telstra Exchange Tower, Caltex service station (approximately 150 m north east), commercial properties;
- **East:** Anderson Street (directly east), low density residential properties (beginning approximately 55 m east);
- **South:** Public open space (including tennis courts and vacant parkland), nursing home (approximately 240 m south east), Lilydale Lake (approximately 295 m south), Yarra Valley Water Refill Station (approximately 620 m south east), Olinda Creek (approximately 820 m south east); and
- **West:** Lilydale Bowling Club (directly west), Council car parking, public open space (including skate park, go-kart track, a small unnamed lake and vacant parkland), commercial properties (approximately 260 m east), Lilydale quarry (approximately 1.2 km west to south west, also known as Cave Hill Quarry).

The closest sensitive receptors were considered to be the low density residential properties approximately 55 m east, Lilydale Lake approximately 295 m south, Olinda Creek approximately 820 m south and the public open spaces directly south and west of the Site.

6.3 Geology

Review of the Geological Survey of Victoria *Ringwood* 1:63,360 Map Sheet No. 849, Zone 7, 1981 indicated that the Site was located close to the boundary of the following two (2) geological units:

- Quaternary-aged low-level alluvial deposits consisting of beach sands; and
- Devonian-aged rhyolite, referred to as 'Coldstream Rhyolite' consisting of a combination of often finely flow-banded, interbedded fragmental rhyolite.

Based on field observations and review of the GeoAust report, the underlying rock type at the Site was consistent with rhyolite.

6.4 Hydrogeology

6.4.1 Surface Water Receptors

The closest off-site surface water receptors to the Site were considered to be:

- Lilydale Lake, located approximately 295 m south; and
- Oldina Creek, located approximately 820 m south east.

6.4.2 Groundwater Database Search

A search of the Visualising Victoria's Groundwater (VVG) on-line database (www.vvg.org.au, accessed on 31st March 2016) indicated that groundwater in the vicinity of the Site is likely to be present between 10-20 m below ground level (bgl) and is likely to have a salinity range of between 1,000-3,500 mg/L as total dissolved solids (TDS).

These database search results were consistent with a review of the Department of Environment, Land, Water & Planning (DELWP) Groundwater Resource Report obtained for the Site locality, which also reported an expected salinity of between 1,001 and 3,500 mg /L as TDS and stated that groundwater would likely be encountered within basement sedimentary bedrock (fractured rocks) such as siltstone, mudstone, shale and/or igneous rocks (volcanic) between 10 and 20 m bgl.

Based on the expected salinity range of groundwater, this would place groundwater within Segment B in accordance with the State Environment Protection Policy (SEPP) Groundwaters of Victoria, 1997.

The beneficial uses of groundwater required to be protected for Segment B groundwater conditions include:

- Maintenance of Ecosystems;
- Potable Mineral Water Supply;
- Agriculture, Parks and Gardens;
- Stock Watering;
- Industrial Water Use;
- Primary Contact Recreation; and
- Buildings and Structures.

A copy of the DELWP Groundwater Resource Report is provided as Appendix B.

A search of the VVG on-line database and DELWP Water Measurement Information System for groundwater bores within a 2 km radius of the Site indicated there were twenty (20) bores registered. A review of the available groundwater bore information has been summarised in Table 2 below.

Table 2: Summary of Surround Groundwater Bores

Bore ID	Easting / Northing	Distance (m) / Direction[1]	Bore Depth (m)[2]	Groundwater Use	Lithology/ Rock Type	Installation Date
WRK980963	354518/5819565	428 W	25	N/A[3]	N/A	N/A
WRK071943	354509/5819583	437 W	32	Observation	Clay, limestone	2012
WRK071944	354509/5819583	437 W	32	Observation	Clay, limestone	2012
WRK989259	354477/5820063	671 NW	25	N/A	N/A	N/A
WRK066917	354207/5819888	799 WNW	4.5	Observation	Clay	2012
WRK066918	354207/5819888	799 WNW	13	Observation	N/A	2012
WRK986808	355577/5820118	827 NE	25	N/A	N/A	N/A
WRK989505	354855/5820598	1019 N	25	N/A	N/A	N/A
WRK978753	355277/5820652	1119 NNE	100	N/A	N/A	N/A
WRK052286	35430/5818460	1198 SSW	20.8	Observation	Quarry overburden	2010
WRK059151	355929/5820329	1234 NE	9	Observation	Clay	2010
WRK070695	355931/5820355	1251 NE	73	Industrial	Clay, mudstone, shale	2012
WRK990818	355805/5818589	1314 SE	150	N/A	N/A	N/A
WRK052290	354368/5818401	1316 SSW	42	Observation	N/A	2010
WRK987345	356022/5820350	1321 NE	25	N/A	N/A	N/A
WRK987347	356027/5820382	1344 NE	25	N/A	N/A	N/A
WRK987346	356044/5820359	1345 NE	25	N/A	N/A	N/A
WRK043013	353663/5818784	1511 SWS	N/A	Industrial/ Dewatering	N/A	N/A
WRK966943	356273/5818844	1519 ESE	25	N/A	N/A	N/A
WRK982482	356262/5820487	1597 NE	25	N/A	N/A	N/A

(1) Relative to the Site (MGA 55 easting 354946, northing 5819583)

(2) m bgl – metres below ground level

(3) N/A – no information available

The search indicated that registered groundwater bores located within a 2 km radius of the Site were predominantly listed as being used for observation, industrial and/or dewatering purposes or the use was unspecified. There were no domestic, stock or irrigation bores registered within 2 km of the Site. No further information on groundwater chemistry or lithology was available for the groundwater bores reviewed.

6.5 EPA Victoria Groundwater Quality Restricted Use Zones

A review of the EPA Victoria *Map of Groundwater Restricted Use Zones in Victoria* (http://www.epa.vic.gov.au, accessed on the 1st April 2016) identified that the Site was not located within, nor within the vicinity of an EPA Victoria designated Groundwater Quality Restricted Use Zone (GQRUZ).

6.6 EPA Victoria Priority Sites Register

A search of the EPA Priority Sites Register (PSR) was undertaken through Landata, a system of DELWP. The extract obtained for the Site address 15 Anderson Street, Lilydale, Victoria and 13 Hardy Street, Lilydale (parcel of land incorporating the Site) dated 4th April 2016 stated that the Site is not listed on or located in the vicinity of a property listed on the PSR.

A search of the EPA Victoria website and VVG online database on 1st April 2016 noted that the nearest property in relation to the Site listed on the PSR was a former landfill requiring ongoing management located on Ingram Road, Coldstream, approximately 4.4 km north east of the Site. Based on the distance of the listed priority site in relation to the subject Site, it is unlikely that any contamination issues associated with this property would impact on the Site.

The EPA PSR extract for the Site has been provided in Appendix C of this report.

6.7 Review of Surrounding Environmental Audit Reports

A search of the EPA Victoria list of environmental audit reports (www.portal.epa.vic.gov.au, accessed 1st April 2016) indicated there were two (2) environmental audits completed for properties within 3 km of the site.

A summary of findings of the audit report review is provided in Table 3 on the following page.

Table 3: Summary of Environmental Audits within a 3 km radius of the Site

Site	Cavehill Limestone Quarry, Hull Road, Lilydale	Cavehill Limestone Quarry, Hull Road, Lilydale (additional portion of land directly north of the former 2010 audit boundary)
CARMS	65516-1	65516-2
Date of EA[1] Report	August 2010	April 2015
Certificate/Statement	Certificate	Certificate
Distance from Site	2.3 km to the south west	1.9 km to the south west
Previous Use/s	Agricultural / grazing land	Agricultural and as a buffer zone between the quarry and residential area.
Geology	Devonian-aged sandstone, underlain by limestone, underlain by siltstone. Field observations indicated natural formation was encountered at 0.2 m bgl[2] and comprised basaltic silty clays. Limestone was also observed to be outcropping.	Devonian-aged sandstone, limestone and siltstone. Field observations indicated natural formation was encountered at depths of 0.4 to 2.0 m bgl and comprised silty clay. Natural siltstone was encountered at depths of 1.4 to 2.0 m bgl.
Groundwater flow direction	An intrusive groundwater investigation was not undertaken. Regional groundwater flow was considered likely to be south to south west direction. The flow direction was also considered likely to be influenced by extensive dewatering activities undertaken at the adjacent quarry (to the north).	An intrusive groundwater investigation was not undertaken. Regional groundwater flow was considered likely to be in a south to south west direction. The flow direction was considered likely to be influenced by extensive dewatering activities undertaken at the adjacent quarry (to the north).
Hydrogeology	Unconfined fractured bedrock comprising sandstone, limestone and siltstone.	Unconfined fractured limestone, sandstone and siltstone.
Number of Wells	N/A	N/A
Depth of Wells (m)	N/A	N/A
Depth to GW[3]	Within the regional aquifer ranges between 10 to 20 m bgl however due to excessive dewatering activities at the adjacent quarry, GW is expected to be encountered deeper. Gauging of offsite wells indicated GW depths ranged between 38 and 100 m bgl.	N/A

Table 3: Summary of Environmental Audits within a 3 km radius of the Site

Contaminants found over detection limits or adopted investigation levels	SOIL – total chromium, nickel (both considered naturally occurring background concentrations) GW – N/A	SOIL – beryllium, iron (both considered naturally occurring background concentrations) GW – N/A
TDS[4] (mg/L)	1,300 to 1,700 mg/L (expected based on sampling from adjacent quarry pit)	1,001 to 3,500 mg/L (expected)
GW Segment	Segment B (expected)	Segment B (expected)

[1] EA – environmental audit

[2] m bgl – metres below ground level

[3] GW – groundwater

[4] TDS – total dissolved solids

7 Supplied Documentation

Documentation pertaining to a previous environmental assessment at the Site was provided by Council to Prensa for review. A review of the supplied documentation has been provided below.

7.1 Connolly Soil Investigation Report (2011)

Peddle Thorp Architects Pty Ltd engaged Connolly Environmental (Connolly) to conduct a soil investigation at the Site in 2011 (ref: *Soil Investigation: Yarra Ranges Shire Offices, Lilydale, VIC,* dated December 2011). The purpose of the investigation was to assess the contamination status of the soil within the proposed development area for off-site disposal (in accordance with *Victorian EPA Industrial Waste Resource Guidelines*, *Soil Hazard Categorisation and Management* (IWRG621)). It was noted that geotechnical investigations were also conducted by Hardrock as part of these works.

Connolly established a total of ten (10) soil bores which were advanced to a maximum depth of 1.5 m below ground level (bgl). Soil samples were collected from approximately 0.2 m, 0.5 m, 1.0 m and at the base of each bore. The approximate locations of the Connolly boreholes are depicted in Figure 3 in the 'Figures' section of this report.

Sample locations B1, B2 and B10 were noted to comprise an asphalt surface underlain by crushed rock and silty clay fill to a maximum depth of 0.5 m. Other surface layers were grassed. Fill across the Site was noted to comprise silty clay and clayey silt, brown with minor sand and crushed rock (described as being possibly disturbed natural from previous cut and fill activities associated with landscaping works). The depth to fill varied across the Site and the maximum depth of fill encountered was 0.9 m bgl.

Natural material onsite reportedly comprised silty clay and clayey silt, which was described as light brown and greyish brown with yellow mottling. Two (2) boreholes (B7 and B10) located along the north western boundary and south western portion of the Site, respectively, were terminated on inferred weathered siltstone at 1.1 m bgl. Localised perched water was reportedly encountered in fill soils above the natural silty clay layer at one (1) borehole (B1), located to the north east of the Civil Space building at 0.5 m bgl.

A summary of soil exceedances and conclusions from the Connolly investigation has been provided in Table 4 on the following page.

Table 4: Summary of Soil Exceedances (Connolly 2011)

Borehole	Depth (m bgl)	Contaminant	Fill/Natural	Soil Category	Explanation for elevated concentration
B1	0.2	Total PAH	Fill	C	Indicative of asphalt fragments within the sample, therefore not representative of the contamination status.
B2	1.5	Fluoride	Natural	C	Naturally occurring background concentrations.
B3	0.2	Nickel	Fill	C	Associated with the presence of basaltic gravels.
	1.5	Fluoride	Natural	C	Naturally occurring background concentrations.
B4	1.4	Fluoride	Natural	C	Naturally occurring background concentrations.
B7	1.0	Fluoride	Natural	C	Naturally occurring background concentrations.
B9	0.5	Nickel	Fill	C	Associated with the presence of basaltic gravels.
B10	1.0	Fluoride	Natural	C	Naturally occurring background concentrations.

Based on analytical results and field observations, Connolly concluded the following:

- *"Fill material on site is classified as **EPA Fill material with naturally elevated nickel** for offsite disposal purposes;*
- *Natural soils were classified as **EPA Fill material with naturally elevated fluoride** for offsite disposal purposes;* and
- *Given the elevated naturally occurring concentrations of fluoride and nickel, this soil should not be used for a sensitive use. It can be disposed to landfill or used within a non-sensitive development (such as commercial/industrial). The receiver of the soils must be notified of the naturally elevated fluoride and nickel and provided with the results."*

A copy of the Connolly (2011) report is provided as Appendix D.

8 Site History Review

8.1 Current Title Information

Current certificates of title for 15 Anderson Street, Lilydale, Victoria were obtained from Landata.

The Site is described as being within Lot 1 on Plan of Subdivision 546467D within certificate of title Volume 11222, Folio 059. Based on a copy of the plan obtained from Landata, the Site comprises the north eastern corner of the aforementioned certificate of title. The proprietor of the Site was listed as Yarra Ranges Shire Council of 15 Anderson Street, Lilydale from 17th June 2010. The parent title of the Site was listed as Volume 11175, Folio 939.

A copy of the current certificate of title and plan information is provided as Appendix E.

8.2 Historical Title Search

A review of historical title information obtained from Landata indicated that there was limited information available for the Site.

The Site was formerly described as Lot 1 on Title Plan 944762T within Volume 11175, Folio 939. Based on plan information, the Site comprises the north eastern portion of the certificate of title. The proprietor of the Site was listed as Yarra Ranges Shire Council of Anderson Street, Lilydale from 30th November 2009. No parent title was listed for certificate of title Volume 11175, Folio 939.

No further certificate of title information could be obtained for the Site.

A copy of the historical title information and plan information is provided as Appendix F.

8.3 Aerial Photographs

Aerial photographs dating back to 1956 were reviewed as part of the DSI. Descriptions of the aerial photographs are presented in Table 5.

Copies of the aerial photographs reviewed are provided in Appendix G of this report.

Table 5: Aerial Photographs

Date	Observations On-Site	Observations Off-Site
1956	The Site appeared to comprise vacant land, possibly used for agricultural/grazing purposes.	The surrounding area appeared to comprise residential/commercial properties to the north (fronting Main Street, Lilydale) and vacant land, possibly used for agricultural/grazing purposes to the south. A patch of dense vegetation was visible to the south east of the Site. The Site was bounded by Hardy Street to the north and Anderson Street to the east. Maroondah Highway was visible approximately 165 m north of the Site, running in an east to west direction. The Lilydale train line was visible approximately 635 m east of the Site, running in a north easterly to south westerly direction. The beginning of Melba Park (including Lilydale Football Club) was visible approximately 500 m north west of the Site. An unnamed creek was visible approximately 235 m west of the Site, running in a north to south direction.
1962	A building (possibly Anderson Street Main Building and Civic Space) was visible in approximately the centre to western boundary of the Site. Two (2) driveways entered the Site off Anderson Street and one (1) driveway was visible running onto the Site from Hardy Street in the north western corner of the Site. A small rectangular building was observed to the north of the main council building which is possibly the existing Contact Centre and Public Toilet.	The surrounding area appeared to comprise a combination of residential properties, commercial/industrial properties and vacant land. Obvious changes included the following: • A portion of the dense vegetation to the east of the Site had been cleared for residential development; • Land directly west of the Site appeared to have been cleared and levelled; and • A property had been cleared and levelled approximately 300 m west of the Site.

Table 5: Aerial Photographs

Date	Observations On-Site	Observations Off-Site
1972	The buildings that was previously under construction appeared to have been completed. A rectangular building (Anderson Street Main Building and Civic Space) was visible with a smaller adjoining rectangular building to the north.	Further development had occurred in the surrounding area. Hardy Street had been extended across the unnamed creek in a westerly direction. The Lilydale Bowling Club was visible directly west of the Site. Commercial/industrial properties were visible around the intersection of Anderson Street and Maroondah Highway including a service station (approximately 170 m north east of the Site) and properties with saw-toothed roofs. A small property (currently Lilydale Nursing Home) was also visible approximately 145 m south east of the Site. Further residential development had occurred in the estate directly east of the Site on the eastern side of Anderson Street.
1978	The Site appeared relatively unchanged from the previous aerial photograph.	The surrounding area remained relatively unchanged from the previous aerial photograph with the exception of the Lilydale Bowling Club (two (2) greens and associated club rooms) being visible and the land directly west of the Site and the Lilydale Bowling Club which appeared to have been cleared and levelled.
1981	The Site appeared relatively unchanged with the exception of an extension being added onto the Anderson Street Main Building in the south west corner.	The surrounding land use remained relatively unchanged. Four (4) tennis courts and an associated car park had been developed directly south west of the Site on the land that had previously been cleared and levelled.
1991	An additional building (Lilydale Library) was visible to the south of the Anderson Street Main Building. A small square building (Compliance & Risk Portable) had been added to the west of the Civic Space.	The surrounding land use remained relatively unchanged. An additional green was added to the Lilydale Bowling Club directly west of the Site and a car park had been developed on the western portion of the Lilydale Bowling Club. Unmade roads were visible to the south of the Site and ran south towards Lilydale Lake (visible approximately 295 m south of the Site). A small patch of land directly south of the Site appeared to have been concreted.
2006	The Site appeared relatively unchanged from the previous aerial photograph with the following exceptions noted. Two (2) buildings (Health Portables) had been constructed to the north and south of the Compliance & Risk Portable. The Health Portable to the north extended into the car park (off Hardy Street). The Health Portable to the south extended along the western boundary of the Anderson St Main Building. The Site layout was consistent with the current site layout.	The surrounding land use remained relatively unchanged. A rectangular building (Tree House Building and People & Culture Portable) was visible on the patch of concrete directly south of the Site. A skate park and go-karting track was visible to the west of the tennis courts, approximately 130 m west of the Site.
2016	The Site appeared relatively unchanged from the previous aerial photograph.	The surround land appeared relatively unchanged from the previous aerial photograph, with the exception of a building (Strategy & Sustainability Portable) to the south of the Site being constructed.

8.4 Royal Historical Society of Victoria

Limited information was provided by the Royal Historical Society of Victoria (RHSV) on the historical development of the Site and surrounding area.

RHSV acknowledged that the Site was located south of the Maroondah Highway, on the western side of Anderson Street and south of Hardy Street.

The area of Lilydale was first recognised as a Shire in 1872 and as a district in 1956. A search of the Victorian Municipal Directory of 1885 showed that it was formerly known as "Lillydale" and predominantly comprised grazing and viticultural land.

The Sands and McDougall (S&MD) Directories listed Lilydale as a country town and provided alphabetical lists of residents. In 1933, S&MD Directories list a Shire Hall in Lilydale however the location was unknown.

A search of the Melways Directories showed that from (at least) 1966 to the present the Site had been used by the Lilydale Shire Offices.

No further information was provided by RHSV.

A copy of the RHSV report is provided as Appendix H of this report.

8.5 State Library of Victoria Search

A search of the State Library of Victoria (SLV) website was undertaken by Prensa on 5th April 2016. The following information pertinent to the Site and surround area has been summarised below. Copies of the information obtained from SLV are provided in Appendix I of this report.

8.5.1 Melbourne Metropolitan Board of Works

A search of the Melbourne Metropolitan Board of Works (MMBW) detailed plan 820 BJE, dated 1930 depicted the land to the north of the Site (northern side of Hardy Street). The properties directly north of the Site (between Hardy/Main Street) appeared to be owned by individuals and possibly comprised residential or small commercial properties. Properties further north of the Site also appeared to have individually owned (likely to be residential) or Crown Land (Shire Hall, public open spaces, schools and churches), with the exception of the 'Lillydale Gas Company Ltd.' (currently Lilydale Football Club) which was observed 470 m north west of the Site. The Council Shire Hall was observed on the south western corner of Chapel Street and Castella Street.

No details pertaining to the Site were provided, however, it was considered likely to be vacant land.

8.5.2 Trove

A flier obtained from SLV website indicated that the land directly east of the Site (on the eastern side of Anderson Street) had been residential since approximately 1887. The flier was an advertisement for land for sale in 'Mount View Estate'.

No details pertaining to the Site were provided, however, it was considered likely to be vacant land.

9 Site Inspection

An inspection of the Site involving a limited visual walkover of internal and external Site buildings and immediately surrounds was completed by Prensa on 3rd March 2016 and during fieldworks undertaken on 22nd, 23rd and 24th March 2016.

Detailed below is a summary of observations made during the site inspection:

- The Site was noted to comprise the Yarra Ranges Council offices and public library;
- Multiple buildings were present onsite including Council offices, Lilydale Library, training rooms and toilet blocks;
- The Site and surrounding topography was gently undulating. The Site appeared to slope gently towards the south of the Site. Surface drainage and run off was likely to be directed into designated stormwater drainage system or towards the south of the Site;
- Surfaces were a combination of the following:
  - Unpaved with exposed soil and grass (predominantly in the northern portion of the Site);
  - Bitumen within car parks and driveways present along the eastern boundary, north eastern corner, and south western corner of the Site; and
  - Concrete hardstand beneath the buildings and structures.
- No odorous, significantly stained or discoloured soils were observed on the Site surfaces;
- Vegetation on the Site was limited to the boundaries of the Site and exposed grassed areas. Vegetation was not observed to be distressed;
- No visible evidence of underground storage tanks (USTs) or underground infrastructure was observed onsite; and
- Surrounding land uses comprised commercial properties including a car dealership with a garage located on the north side of Hardy Street opposite the Site. Two (2) possible vent pipes typical of USTs were observed on the workshop building associated with the car dealership. Residential properties were observed to the east of the Site and other municipal facilities (car park), tennis courts, and Lilydale Bowling Club were observed to the south and west of the Site.

A site features plan has been provided as Figure 2 in the 'Figures' section of this report.

10 Contaminants of Potential Concern

Based on the desktop review, site history review and site inspection conducted for the Site and surrounding properties, the contaminants of potential concern (CoPC) associated with historical and/or current activities at the Site are included in Table 6 below.

Table 6: Potential Sources of Contamination

Potential Contamination Source	**Contaminants of Potential Concern**
Onsite: Imported fill	• Metals; • Polycyclic aromatic hydrocarbons (PAH); and • Total recoverable hydrocarbons (TRH).
Onsite: Historical agricultural/grazing land	• Organochlorine Pesticides (OCP); and • Organophosphate Pesticides (OPP).
Offsite: CFA, service station, vehicle workshop	• Petroleum hydrocarbons (TRH, PAH, benzene, toluene, ethylbenzene, xylenes); and • Volatile organic compounds (VOCs).
Offsite: Historical agricultural/grazing land	• Organochlorine Pesticides (OCP); and • Organophosphate Pesticides (OPP).

11 Soil Assessment

11.1 Sampling Strategy

On 22-24 March 2016 Prensa collected a total of twenty eight (28) soil samples from seven (7) borehole locations (denoted BH2-BH7 and BH10). Soil boreholes were established in conjunction with geotechnical investigations conducted by GeoAust using a combination of hand sampling equipment (i.e. hand auger) and a drill rig (solid flight auger) with samples retrieved from a maximum depth of 2.0 m bgl.

Approximate borehole locations are depicted on Figure 3 in the 'Figures' section.

Borehole logs are provided as Appendix J of this report.

The geotechnical report has been provided as Appendix N of this report.

11.1.1 Proposed New Building Footprint (northern portion of the Site)

Prensa collected soil samples from four (4) soil borehole locations (denoted as BH2-BH5) established within the approximate footprint of the proposed new building. Borehole locations in this portion of the Site were established in a general gridded pattern (within accessible areas) to supplement and infill data gaps from the previous Connolly (2011) investigation.

The additional four (4) borehole locations in conjunction with the previous works undertaken by Connolly (2011), which included the establishment of seven (7) sampling locations within the current and proposed construction zone, satisfies the minimum sampling density requirements specified in Australian Standard (AS) 4482.1-2005 for an area of this size (approximately 0.3 ha).

11.1.2 Proposed Building Refurbishment (southern portion of the Site)

Prensa collected soil samples from three (3) soil borehole locations (denoted as BH6, BH7 and BH10) within the vicinity of the Anderson Street Main Building and Lilydale Library.

Borehole locations were generally established within accessible areas as close as practicable to the building footings, primarily to assist in the geotechnical investigation of subsidence issues in this portion of the Site and to supplement data obtained from the previous Connolly (2011) investigation. The aim of this part of the DSI was to provide Council with a preliminary indication of the potential for contamination to exist within this area of the Site.

11.2 Soil Sampling

Soil samples were collected from either the drilling auger or from the hand auger, taking care not to sample soils directly adhered to the auger. Soil samples were generally collected from near surface, 0.5 m, 1.0 m and 1.5 m depths (or until rock was encountered or natural soil was adequately penetrated). Additional samples were collected where distinct changes in the soil profile were observed.

Disposable nitrile gloves were worn during sample collection, which were replaced after the collection of each sample and between sampling locations to avoid cross-contamination. Collected soil samples were placed in 250 mL glass jars with Teflon-lined lids that were prepared and supplied by a NATA accredited laboratory. Collected samples were stored in chilled ice chests and transported to the laboratory within specified holding times, along with chain of custody documentation for the analyses described in Section 11.4.

Upon completion of soil sampling, each borehole was backfilled with the excess soil cuttings generated during borehole establishment and concrete/bitumen was reinstated (where applicable).

11.3 Soil Screening

On-site screening of collected soil samples was conducted using a photoionisation detector (PID). The PID was used to conduct a headspace analysis to assess for the presence of volatile organic compounds (VOCs) in soil. The PID was calibrated prior to use with isobutylene gas of a known concentration (100 ppm).

Field observations relating to obvious odours and/or stained or discoloured soil during sampling was also recorded.

11.4 Analytical Schedule

Soil samples collected were analysed for the contaminants specified in Table 7 below.

Table 7: Soil Bore Locations and Analytical Schedule

Borehole Location	Borehole ID	Samples Collected	Samples Analysed	Analysis
Proposed new building footprint, north east corner	BH2	0.2 0.5 1.0 1.5 2.0	0.2 0.5	TRH(1), metals (M12)(2), PAH(3), OCP(4), OPP(5)
Proposed new building footprint, north west corner	BH3	0.3 0.5 0.8 1.4	0.3	TRH, metals (M12), PAH, OCP, OPP
			0.5	NEPM 2013 Screen(6), VOC(7), pH, CEC(8), pH ($CaCl_2$ extract), sulphate, chloride
Proposed new building footprint, western boundary	BH4	0.33 0.55 1.1	0.33	NEPM 2013 Screen, TRH, VOC, pH, CEC, pH ($CaCl_2$ extract), sulphate, chloride
			0.55	TRH, metals (M12), PAH, OCP, OPP
Proposed new building footprint, south eastern corner	BH5	0.35 0.5 1.0 1.5 2.0	0.35	TRH, metals (M13)(9), PAH, OCP, OPP
			0.5	TRH, metals (M12), PAH, OCP, OPP
Proposed refurbishment, garden bed outside offices north eastern area	BH6	0.2 0.5 1.0 1.3 1.5	0.2	NEPM 2013 Screen, TRH, VOC, pH, CEC, sulphate, chloride
			0.5	TRH, metals (M12), PAH, OCP, OPP
Proposed refurbishment, garden bed outside offices south eastern area	BH7	0.2 0.5 1.0	0.2	TRH, metals (M13), PAH, OCP, OPP
			0.5	NEPM 2013 Screen, TRH, VOC, pH, sulphate, chloride
Proposed refurbishment, car park bay	BH10	0.3 0.5 1.0	0.3	TRH, metals (M13), PAH, OCP, OPP
			0.5	TRH, metals (M12), PAH, OCP, OPP

(1) TRH: Total Recoverable Hydrocarbons.

(2) Metals M12: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Mo, Se, Ag, Sn.

(3) PAH: Polycyclic Aromatic Hydrocarbons.

(4) OCP: Organochlorine Pesticide.

(5) OPP: Organophosphate Pesticide.

(6) NEPM 2013 Basic Suite screen includes:

- Polycyclic Aromatic Hydrocarbons (PAH);
- Phenols;
- Organochlorine Pesticides (OCP);
- Acid Herbicides;
- Atrazine;
- Chlorpyrifos;
- Bifenthrin;
- Polychlorinated Biphenyls (PCB);
- Metals including As, Be, B, Cd, Co, Cr, Cu, Ni, Pb, Mn, Hg, Se, and Zn;
- Cr6+; and
- Cyanide.

(7) VOC: Volatile Organic Compounds.

(8) CEC: Cation Exchange Capacity.

(9) Metals M13: As, Be, B, Cd, Co, Cu, Hg, Pb, Ni, Mn, Se, Zn, $Cr6^+$.

11.5 Beneficial Uses and Investigation Levels

The State Environment Protection Policy (SEPP) (Prevention and Management of Contamination of Land) 2002 (Land SEPP) outlines the beneficial uses to be protected. The beneficial uses of land listed in the Land SEPP are provided in Table 8 below, which are derived from Table 1 in the SEPP.

Based on the ongoing use of the Site as municipal offices, the relevant beneficial uses requiring protection for a commercial land use setting are displayed in bold underline italics in Table 8 below.

Table 8: Beneficial Uses of the Land

Beneficial Use	Parks & Reserves	Agricultural	Sensitive Use		Recreation/ Open Space	***Commercial***	Industrial
			High Density	Other			
Maintenance of Ecosystems							
Natural Ecosystems	✓						
Modified Ecosystems	✓	✓		✓	✓		
Highly Modified Ecosystems		✓	✓	✓	✓	***✓***	✓
Human Health	✓	✓	✓	✓	✓	***✓***	✓
Buildings & Structures	✓	✓	✓	✓	✓	***✓***	✓
Aesthetics	✓	✓	✓	✓	✓	***✓***	
Production of Food, Flora & Fibre	✓	✓		✓			

11.6 Adopted Investigation Levels, Screening Levels and Criteria

11.6.1 Investigation Levels

The NEPM 2013 Guidelines provide a range of investigation levels for the protection of ecological health and human health, referred to as ecological investigation levels (EILs) and health investigation levels (HILs), respectively.

The NEPM 2013 Guidelines provide EILs for the protection of terrestrial ecosystems for three (3) generic land use settings as follows:

- Areas of ecological significance (i.e. national parks, state parks, wilderness areas and designated conservation areas);
- Urban residential and public open space; and
- Commercial and industrial land uses.

Site-specific EILs were derived using the National Environment Protection Council's (NEPC) *Ecological Investigation Level Calculation Spreadsheet,* 2010 for aged arsenic, copper, DDT, lead, naphthalene, nickel and zinc, which were based on one (1) soil sample collected from both fill and natural soil at the Site and analysed for physiochemical properties.

The site-specific EIL calculations have been provided in Appendix K.

In the absence of NEPM 2013 EIL guidelines, the Canadian Soil Quality Guidelines (CSQG) (1999-August 2013) ecological values for a commercial land use setting have been adopted, where required. In the absence of CSQG, the ANZECC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, Investigation B levels (1992) ecological values for a commercial land use setting have been referenced (manganese only).

The NEPM 2013 Guidelines provide HILs for the protection of human health for the following four (4) exposure settings:

- **HIL 'A'** residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools;
- **HIL 'B'** residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats;
- **HIL 'C'** public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate; and
- **HIL 'D'** commercial/industrial such as shops, offices, factories and industrial sites.

For the purpose of this assessment and based on the continued commercial use of the Site, the following EILs and HILs have been adopted:

- **NEPM EILs for commercial and industrial** land use setting; and
- **NEPM HIL 'D'** for the protection of site users based on the proposed ongoing commercial land use setting. NEPM HIL 'D' has also been adopted to assess potential health risks to maintenance workers or construction workers in direct contact with soils at the Site.

11.6.2 Screening Levels

In addition to the investigation levels, the NEPM 2013 Guidelines include Ecological Screening Levels (ESLs) and Health Screening Levels (HSLs) that relate to specific petroleum hydrocarbon contaminants. The ESLs and HSLs utilise the same land use settings as the EILs and HILs.

ESLs for petroleum hydrocarbons are the concentrations above which further appropriate investigation and evaluation will be required. ESLs broadly apply to coarse and fine grained soil types and various land uses and are generally applicable to the top 2 m of soil.

The following ESLs and HSLs were adopted for the purposes of this DSI:

- **NEPM ESLs for commercial and industrial** land use settings; and
- **NEPM HSL 'D'** for the health of site users based on the ongoing commercial use of the Site as well as future users of the Site (including the health of maintenance/construction workers) through the vapour inhalation exposure pathway.

Based on the texture of the soil encountered during the DSI which comprised a combination of silt and silty clay, ESLs for a fine soil type and HSLs for silt were adopted.

The CRC Care Technical Report No. 10, *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater*, 2011 (CRC 2011) provides the framework for conducting petroleum vapour intrusion assessments resulting from contamination of soil and groundwater by petroleum hydrocarbons. The HSL adopted was CRC CARE 'D' HSL for the health of construction workers and future maintenance workers, to assess potential human health risks associated with direct contact.

11.6.3 Management Limits

The analytical results were compared to the 'management limits' for petroleum hydrocarbon compounds outlined in NEPM 2013 Guidelines. These management limits are used to avoid or minimise the following potential effects of petroleum hydrocarbon contamination:

- Formation of observable light non-aqueous phase liquid (LNAPL);
- Fire and explosion hazards;
- Effects on buried infrastructure (i.e. penetration of, or damage to, in-ground services by hydrocarbons); and
- Aesthetics.

In the application of the management limits, consideration must be given to the presence and depth of basements and underground infrastructure and depth to groundwater in order to assess the maximum depth to which the limits apply. In addition, management limits may be less relevant at operating industrial sites with no or limited sensitive receptors.

11.6.4 Buildings and Structures

The Land SEPP (2002) states, "*Contamination must not cause the land to be corrosive to or adversely affect the integrity of structures or building materials*".

The potential for the condition of soils at the Site to adversely impact upon buildings may include elevated sulphate and chloride concentrations or acidic (low pH) soil conditions which are detrimental to some concrete and steel structures.

Australian Standard 2159 Piling – Design and Installation (AS2159, 2009) has been considered in assessing this beneficial use, in particular the exposure classification for concrete piles in soil.

In addition, the management limits prescribed in Section 11.6.3 have also been considered to assess the potential impacts hydrocarbons may pose to buildings and structures.

11.6.5 Aesthetics

The Land SEPP (2002) states, "*Contamination must not cause the land to be offensive to the senses of human beings*".

The management limits prescribed in Section 11.6.3 give quantitative investigation levels for hydrocarbons to assess the beneficial use Aesthetics, which has been used in conjunction with field observations. The land is generally considered to be aesthetically acceptable if soils are not distinctly odorous, stained or discoloured, do not contain wastes and is not offensive to human senses.

11.6.6 Off-site Disposal Criteria

For the off-site disposal of soil, analytical results were compared to the criteria specified in the Victoria EPA Industrial Waste Resource Guidelines (IWRG621) *Soil Hazard Categorisation and Management*, June 2009, to provide an indication of the possible off-site disposal classification of soils at the Site, should this be required. Soil is characterised into one (1) of four (4) categories:

- Fill Material;
- Category C (Contaminated Soil);
- Category B (Contaminated Soil); and
- Category A (Contaminated Soil).

Soil classified as Fill Material is not regulated by the Victorian EPA and can be reused on the Site or at other properties, provided that it does not preclude the beneficial uses of the land.

Category C (Contaminated Soil), Category B (Contaminated Soil) and Category A (Contaminated Soil) are prescribed wastes. Prescribed wastes require waste transport certificates and must be transported by an appropriately licenced vehicle. When removed from the Site, Category C (Contaminated Soil) and Category B (Contaminated Soil) must be taken to an appropriately licenced landfill. Category A (Contaminated Soils) cannot be disposed directly to an EPA licenced landfill and are required to be treated either onsite or at a remediation facility prior to being disposed to landfill.

11.6.7 Summary of Adopted Guidelines

The beneficial uses to be protected and the corresponding guidelines adopted in light of the intended ongoing commercial/industrial use of the Site are detailed in Table 9 below.

Table 9: Summary of Adopted Guidelines

Beneficial Use	Adopted Investigation Level
Highly Modified Ecosystems	NEPM 2013 EILs (including site-derived EILs) and ESLs (for fine soil type) for commercial/industrial land use setting; Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health in commercial land use settings; ANZECC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, Investigation B Levels (1992); and Dutch Soil Remediation Circular (2013), Soil intervention values.
Human Health	NEPM 2013 Guidelines: • HIL 'D' for commercial/industrial land use setting; and • HSL 'D' vapour intrusion for commercial/industrial land use setting (for silt soil type). CRC CARE, Technical Report No. 10. 2011: HSL 'D' for direct contact.
Buildings & Structures	In accordance with the Land SEPP 2002, "Land that is contaminated with acidic or corrosive substances can degrade concrete structures leading to replacement and/or other costs associated with structure collapse"; NEPM 2013 Guidelines: Management Limits for petroleum hydrocarbon compounds; and Australian Standard AS2159-2009 *Piling – Design and Installation.*
Aesthetics	In accordance with the Land SEPP 2002, soil is not 'to be offensive to the senses of human beings'; and NEPM 2013 Guidelines: Management Limits for petroleum hydrocarbon compounds.

12 Findings

The results of the soil assessment compared to the adopted investigation levels, screening levels, direct contact levels, management limits and off-site disposal criteria are discussed in the subsections below.

Detailed analytical results with comparison to the adopted criteria are provided in Tables 1 and 2 in the 'Tables' section of this report. It should be noted that both Prensa and Connolly data have been collated in Tables 1 and 2.

The chain of custody documentation and NATA accredited laboratory analytical reports are provided as Appendix L and Appendix M respectively of this report.

12.1 Proposed New Building Footprint (northern portion of the Site)

12.1.1 Field Observations

Fill was encountered across this portion of the Site at varying depths between 0.4 and 1.2 m bgl. The lithology of the fill soil profile encountered generally comprised a combination of the following:

- Brown, loose, dry gravelly silt with angular gravels and organic matter;
- Brown/orange stiff, loose, dry medium plasticity clayey silt with decomposed organic matter;
- Light brown to dark grey, very loose, slightly moist clayey gravel (road base gravels); and
- Red-brown, soft, medium dense, slightly moist, low plasticity clayey silt with gravels (road base gravels).

Fill was considered to represent reworked natural soil and was underlain by natural soil that predominantly comprised brown/orange/grey, stiff to very stiff, dry to slightly moist, clay.

No obvious odours or soil staining were noted during sampling which was supported by relatively low PID readings ranging between 0.0 and 0.7 ppm.

12.1.2 Maintenance of Ecosystems

Analytical results reported concentrations of contaminants of concern analysed to be less than the EILs/ESLs adopted for the protection of ecological health in a commercial land use setting, with the exception of one (1) elevated concentration of **manganese** reported in sample BH4_0.33 which was collected from near-surface fill.

12.1.3 Human Health

The reported concentrations of contaminants of concern analysed were less than the HILs and HSLs adopted for the protection of human health in a commercial land use setting.

The reported concentrations of contaminants of concern were also less than the CRC Care HSL adopted to assess potential human health risks associated with direct contact for the protection of health of construction/maintenance workers.

12.1.4 Buildings and Structures

Australian Standard AS2159-2009 *Piling – Design and Installation* states that concentrations of sulphate (as S) should be less than 1,670 ppm for the protection of concrete piles in soil. The concentrations of sulphate (as S) reported in on-site soils ranged from 12 – 13 mg/kg and indicate non-aggressive exposure classification for concrete structures in accordance with AS2159-2009.

Reported pH (aqueous extract) levels in on-site soils (range 8 – 8.4 pH units) indicate non-aggressive exposure classification for concrete and steel structures in contact with soil in accordance with AS2159-2009.

12.1.5 Management Limits

The concentrations of petroleum hydrocarbon contaminants of concern analysed were less than the adopted management limits for a commercial land use setting.

12.1.6 Comparison to Soil Classification Criteria

The analytical results reported concentrations less than the upper limits for Fill Material in accordance with relevant EPA Victoria guidelines, with the following exceptions:

- The concentration of **total PAH** in one (1) near surface sample exceeded the upper limits for Fill Material but was less than the upper limits for Category C (Contaminated Soil);
- The concentration of **nickel** in one (1) near surface sample exceeded the upper limits for Fill Material but was less than the upper limits for Category C (Contaminated Soil); and
- The concentrations of **fluoride** in three (3) samples exceeded the upper limits for Fill Material but were less than the upper limits for Category C (Contaminated Soil).

12.2 Proposed Building Refurbishment (southern portion of the Site)

12.2.1 Field Observations

Fill was encountered across this portion of the Site at varying depths between 0.6 and 1.3 m bgl. The lithology of the fill soil profile encountered generally comprised a combination of the following:

- Brown, very loose, dry to slightly moist, gravelly silt with trace fine to medium sand and organic matter;
- Light brown, medium dense, dry to slightly moist, silt; and
- Brown, loose, dry, gravelly silt with organic matter and road based gravels.

Fill was underlain by natural soil that predominantly comprised brown/orange, stiff, slightly moist, medium plasticity clay or bedrock.

No odours or soil staining were noted during sampling which was supported by relatively low PID readings ranging between 0.0 and 0.5 ppm.

12.2.2 Maintenance of Ecosystems

Analytical results reported concentrations of contaminants of concern analysed to be less than the EILs/ESLs adopted for the protection of ecological health in a commercial land use setting, with the exception of one (1) elevated concentration of **manganese** reported in sample BH10_0.3 which was collected from fill soils.

12.2.3 Human Health

The reported concentrations of contaminants of concern analysed were less than the HILs and HSLs adopted for the protection of human health in a commercial land use setting.

The reported concentrations of contaminants of concern were also less than the CRC Care HSL adopted to assess potential human health risks associated with direct contact for the protection of health of construction/maintenance workers.

12.2.4 Buildings and Structures

Australian Standard AS2159-2009 *Piling – Design and Installation* states that concentrations of sulphate (as S) should be less than 1,670 ppm. The concentrations of sulphate (as S) reported in on-site soils ranged from <10 – 15 mg/kg and indicate non-aggressive exposure classification for concrete and steel structures in accordance with AS2159-2009.

Reported pH (aqueous extract) levels in on-site soils (range 6.7 – 7.9 pH units) indicate non-aggressive exposure classification for concrete and steel structures in contact with soil in accordance with AS2159-2009.

12.2.5 Management Limits

The concentrations of petroleum hydrocarbon contaminants of concern were less than the adopted management limits for a commercial land use setting.

12.2.6 Comparison to Soil Classification Criteria

The analytical results reported concentrations less than the upper limits for Fill Material in accordance with relevant EPAV guidelines, with the following exceptions:

- The concentrations of **nickel** in two (2) near surface samples exceeded the upper limits for Fill Material but were less than the upper limits for Category C (Contaminated Soil); and
- The concentration of **fluoride** in one (1) sample exceeded the upper limits for Fill Material but was less than the upper limits for Category C (Contaminated Soil).

13 Quality Control/Quality Assurance

13.1 Quality Control Samples

Quality control samples were collected during the sampling event in accordance with Australian Standard 4482.1-2005. The Standard lists a requirement to collect the following quality control samples during each soil assessment:

- Blind replicate sample (one per 20 samples analysed);
- Split sample (one per 20 samples analysed);
- Rinsate (one per piece of equipment per day);
- Field blank (one per day); and
- Trip blank (one per ice chest).

All sampling, decontamination and storage works were conducted in accordance with the Prensa Environmental Work Instructions.

13.1.1 Blind Replicates and Split Samples

Blind replicate and split samples were collected to assess whether the analytical results were acceptable. Relative Percentage Differences (RPDs) were calculated for each of the quality control samples analysed. RPDs are calculated by dividing the difference between the primary sample and quality control sample by the average of the two, as shown below:

$$RPD = \frac{(X_1 - X_2)}{(X_1+X_2)/2} \times 100\%$$

Where X_1 = Primary sample result

X_2 = Replicate sample result

One (1) blind replicate and one (1) split sample were collected from one (1) primary sample, as outlined in Table 10 on the following page.

Table 10: Blind Replicate and Split Sample

Primary Sample	Blind Replicate	Split Sample	Analysis
19476_BH2_0.2	19476_QC1	19476_QC2	Metals (M13), TRH, PAH

The results for the blind and split replicate analysis are provided in Table 11 below.

Detailed results of the blind replicate and split samples are provided in Table 3 of the 'Tables' section of this report.

Table 11: Blind and Split Replicate Analysis

Quality Control Sample	Primary Sample	Results
19476_QC1	19476_BH2_0.2	The RPDs reported were within the 30-50% range recommended in AS4482.1-2005.
19476_QC2	19476_BH2_0.2	The RPDs reported were generally within the 30-50% range recommended in AS4482.1-2005 with the exception of arsenic (+72%) and benzo(a)pyrene TEQ (+82%).

Prensa noted that the majority of the analytical results for primary and duplicate samples were reported less than the laboratory limit of reporting (LOR), whereby RPDs cannot be calculated. The elevated RPDs are considered likely to be associated with the heterogeneous nature of the fill soil profile from which these samples were collected. Furthermore, individual analytical results report for arsenic and benzo(a)pyrene as TEQ were below the respective ecological and health criterion.

Based on the blind replicate and split sample analytical results, the laboratory methods adopted were considered to be appropriate and the results acceptable.

13.1.2 Blank Samples

Rinsate, field blank and trip blank samples were collected during the soil assessment, as outlined in Table 12 below. Detailed results of the blank samples collected are provided in Table 4 of the 'Tables' section of this report.

Table 12: Blank Sampling Schedule

Type	Sample ID	Date	Analysis	Results
Field Blank	19476_FB1	09/02/2016	N/A#	On hold.
Trip Blank	19476_TB1	09/02/2016	TRH (C_6-C_9)	Concentrations less than LOR*.
Rinsate	19476_R1	09/02/2016	Metals (M13), TRH, PAH	Concentrations less than LOR.

*LOR - Limit of reporting

#N/A - Not applicable

Based on the results of the blank samples, the potential for cross-contamination appeared to be negligible and the results were considered to be acceptable.

13.2 Laboratory Quality Control/Quality Assurance

Within the laboratory the following QC samples and methods are routinely processed to assure the quality of reported results:

- Duplicates – A second piece of analysis from the same sample and reported in the same units as the result to show comparison;

- Spike – Addition of an analyte to a sample and reported as percentage recovery. The recovery must lie between 70-130% or 30-130% for phenols;
- Relative Percentage Difference (RPD) – Between two duplicates. Results are acceptable if they are less than ten times the laboratory's LOR or if the results are between ten to twenty times the LOR, the RPD must lie between 0-50%;
- Method Blanks – Performed on laboratory certified sands (solids) and deionised water (water). Method blanks are not to exceed the laboratory's LOR;
- Laboratory Control Samples (LCS) – Reported as per cent recovery. Recoveries must lie between 70-130% or 30-130% for phenols;
- Certified Reference Material (CRM) – use an analyte of known concentration and reported as percent recovery. Recoveries must lie between 70-130% or 30-130% for phenols; and
- Surrogates – added to all samples where appropriate and reported as a percentage recovery. Recoveries must lie between 50-150% or 20-130% for phenols.

Review of the NATA analytical reports prepared by the primary and secondary laboratories indicated that the parameters outlined above were generally met, with the exception of one (1) internal laboratory duplicate RPD reported for volatile organic compounds (1,1-dichloroethene) (Eurofins report #494396-S). It was noted that the duplicate results were considered to pass the laboratory internal acceptance criteria.

Based on the reported laboratory quality control samples and methods used, the results are considered to be acceptable.

13.2.1 Holding Time Compliance

An evaluation of the laboratory sample extraction and analysis dates was undertaken by Prensa. The review of the NATA laboratory reports indicated samples were extracted and analysed with recommended holding times adopted by the laboratory and prescribed in AS 4482.1-2005.

14 Discussion

14.1 Desktop Review and Site Inspection

Based on the site history review, it is understood that the Site was originally vacant land (possibly used for agricultural/grazing purposes) before it was first developed as Yarra Ranges Council circa 1962. Based on the information reviewed it is considered likely that the existing Municipal Offices (comprising the Anderson Street Main Building, Civic Space and Contact Centre/public amenities building) were constructed circa 1962. Information provided by RHSV suggested that from 1966 the Site had been used by the 'Lilydale Shire Offices'. Prior to occupying the Site, the 'Shire Offices' had been located on the corner of Chapel Street and Castella Street, Lilydale. Buildings and structures were progressively added to the original Anderson Street Main Building and Civic Space and by 1991 the layout of the permanent buildings was generally consistent with the current layout.

Surrounding historical land uses included vacant agricultural land (to the south and west), subsequently Council land and public open space (i.e. tennis courts, Lilydale Bowling Club) and Lilydale Quarry. Residential properties were observed to the east of the Site and had been a residential estate since circa 1887. Properties to the north of the Site comprised a combination of residential and commercial properties.

14.2 Impacts on Beneficial Uses

14.2.1 Maintenance of Ecosystems

Reported analyte concentrations were less than the EILs/ESLs adopted for the protection of ecological health in a commercial land use setting, with the exception of two (2) elevated concentrations of **manganese** reported in sample BH4_0.33 and BH10_0.3 which were collected from near-surface fill. Due to the presence of basaltic gravels and crushed rock noted within the surface soils of BH4 and BH10, the elevated concentrations of manganese were considered to be associated with inherently raised concentrations within the basaltic gravels and not representative of contamination. Based on the current and proposed use of the Site, it is considered unlikely that the elevated concentrations pose a significant ecological risk to the highly modified ecosystems present onsite.

14.2.2 Human Health

There were no exceedances of the adopted HILs, HSLs and CRC CARE HSL for the protection of human health (including future construction workers, maintenance workers and users of the Site) in a commercial land use setting.

14.2.3 Management Limits

The concentrations of petroleum hydrocarbon contaminants of concern analysed were less than the adopted management limits for a commercial land use setting.

14.2.4 Buildings and Structures

Australian Standard AS2159-2009 *Piling – Design and Installation* states that concentrations of sulphate (as S) should be less than 1,670 ppm. The concentrations of sulphate (as S) reported in on-site soils ranged from <10 – 15 mg/kg and indicate non-aggressive exposure classification for concrete structures in soil in accordance with AS2159-2009.

Reported pH (aqueous extract) levels in on-site soils were generally alkaline and in the range of 6.7 – 8.4 pH units which in accordance with AS2159-2009, indicate non-aggressive exposure classification for concrete and steel structures in contact with soil.

In addition, given the location of the Site, nature of the local geology and review of Australian Soil Resource Information System (ASRIS) website, it is considered unlikely that acid sulphate soil conditions would be encountered at the Site.

14.2.5 Aesthetics

During the soil assessment, the fill and natural soils observed were generally free from waste with the exception of minor quantities of brick fragments observed within BH6 at an approximate depth of 0.5 m bgl. Soils at the Site were not odorous and no staining or discolouration was observed. The identified brick fragments are not considered to represent an aesthetic concern to the ongoing commercial use of the Site. Fill and natural soils at the locations assessed are not considered to represent an aesthetic concern to the ongoing commercial use of the Site.

14.3 Off-Site Disposal Classification

Analytical results (reported by Prensa and Connolly) were compared to the EPA Victoria Publication IWRG621 (2009) soil hazard categorisation criteria to classify the in-situ soil for off-site disposal purposes.

Analytical results reported (by Prensa and Connolly) identified analyte concentrations were less than the 'Fill Material' threshold criteria in accordance with EPA Victoria Publication IWRG621 (2009), with the exception of total PAH, nickel and fluoride.

A single elevated total PAH concentration was reported during the previous Connolly (2011) assessment which was considered by Connolly to be associated with asphalt fragments in the collected sample and not representative of contamination. PAHs were not detected at elevated concentrations during the current Prensa DSI.

Elevated nickel previously reported in near surface (fill) samples exceeding the upper limits for Fill Material was considered by Connolly to be attributed to the naturally elevated concentrations that can be present within basaltic gravels (associated with the crushed rock fill surface layer).

Elevated fluoride reported in natural soil during the previous Connolly (2011) assessment was considered to be associated with naturally occurring concentrations.

Based on the results and observations of the Site soil profile made during the current soil investigation, Prensa is in agreement with these aforementioned conclusions.

The total dataset of soil samples collected and analysed as part of the assessment satisfies the minimum sample frequency of one (1) sample per 250 m^3 specified in Table 3 of Victorian EPA Publication IWRG702 (2009) for soil classification using the 95% upper confidence level. This sample frequency is relevant for a soil volume of up to 5,000 m^3.

Based on the analytical results, the fill and natural soils within the areas assessed are classified as **Fill Material** for off-site disposal purposes. This classification allows for a total volume of up to 5,000 m^3 of soil generated during future construction, refurbishment and/or maintenance works on the Site to be disposed off-site in accordance with EPA IWRG. Should additional soil volumes require off-site disposal, further sampling and analysis may be required. Given the naturally elevated concentrations of nickel and fluoride, the soils should not be used for a sensitive use. The soils can be disposed to landfill (as Fill Material) or used within a non-sensitive use development (i.e. commercial/industrial).

15 Conclusion

Prensa Pty Ltd (Prensa) was engaged by Yarra Ranges Council (Council) to conduct a Detailed Site Investigation (DSI) of the property located at 15 Anderson Street, Lilydale Victoria (the Site).

At the time of the DSI, the Site was occupied by Council municipal offices and Lilydale public library. Based on information provided by Council, it is understood that the existing Civic Space building and the Contact Centre and public amenities building located in the northern portion of the Site are proposed to be demolished to allow for the construction of a new single or two-level structure for municipal office use. Furthermore, it is also understood that the existing Anderson Street Main Building and adjoining Lilydale Library building are proposed to be fully refurbished in the future without changes to the existing structural footprint.

Council requested Prensa undertake a DSI and Geotechnical Investigation at the Site to infill data gaps in previous environmental assessment and geotechnical investigations undertaken at the Site and to identify the potential for contamination that could represent a potential health risk to construction workers and future users of the Site as a commercial facility.

Council also requested Prensa undertake an intrusive soil assessment and geotechnical investigation in the vicinity of the existing Anderson Street Main Building and Library to investigate slope instability and subsidence issues and to assess the potential for soil contamination in this portion of the Site.

The geotechnical investigation was undertaken by GeoAust Geotechnical Engineers Pty Ltd (GeoAust) in conjunction with the soil sampling component of the DSI. The geotechnical report has been issued as a separate report.

To satisfy Council requirements, the objectives of this DSI were to:

- Identify the potential for contamination to exist as a result of current and/or historical land use activities, which could represent a potential health risk to construction workers and future users of the Site based on the proposed commercial use of the Site;
- Confirm the soil classification for potential future offsite disposal purposes in accordance with relevant EPA guidelines; and
- Recommend any further assessment works or remediation works for any identified contaminated areas, if required.

Current and Historic Land Uses

Based on the site history review, it is understood that the Site was originally vacant land (possibly used for agricultural/grazing purposes) before it was first developed as Yarra Ranges Council circa 1962. The original building was constructed circa 1962 and comprised the Anderson Street Main Building and Civic Space. Additional buildings and structures were progressively added to the original building and by 1991 the layout of the site buildings was generally consistent with the current layout.

Surrounding historical land uses included vacant agricultural land to the south and west, with other areas comprising public open space, a quarry and residential properties.

Summary of Previous Environmental Works

A previous Soil Investigation in conjunction with a Geotechnical Site Investigation was completed at the Site by Connolly Environmental (Connolly) in 2011 for the purposes of characterising in-situ soils for off-site disposal purposes and providing foundation recommendations for a proposed new building in the northern portion of the Site. The Connolly (2011) assessment involved soil sampling from a total of ten (10) soil bores established within the northern portion of the Site and also targeted the Lilydale Library.

The results of the Connolly (2011) soil investigation reported an isolated elevated concentration of total polycyclic aromatic hydrocarbons (total PAH) and elevated background concentrations of nickel and fluoride. The reported total PAH concentration was considered to be associated with asphalt fragments in the sample and not representative of contamination. Fill and natural soils on site were classified as 'Fill Material' in accordance with EPA Victoria Publication IWRG621 (2009) for off-site disposal purposes. Due to naturally elevated nickel and fluoride concentrations, Connolly noted that the soil 'should not be used for a sensitive use'.

Impact Upon Beneficial Uses

Analytical results from the current DSI and previous Connolly (2011) soil investigation were compared to relevant ecological and health-based criteria for the proposed ongoing commercial land use of the Site. The analytical results were reported to be less than the adopted investigation and screening levels for the protection of human health (including future construction/maintenance workers) in a commercial land use setting at the locations assessed.

Furthermore, the analytical results reported were less than the adopted ecological investigation and screening levels for commercial land use at the locations assessed, with the exception of manganese reported in two (2) near surface samples. Due to the presence of basaltic gravels and crushed rock (road base) noted within the surface of BH4 and BH10, the elevated concentrations of manganese were considered likely to be representative of inherently raised concentrations associated with the basaltic gravels and not representative of contamination. Based on the current and proposed ongoing commercial use of the Site, it is considered unlikely that the reported manganese concentrations will pose a significant ecological risk to the highly modified ecosystems present onsite.

Reported pH, sulphate and chloride concentrations were below levels considered to be potentially aggressive towards concrete and/or steel structures at the locations assessed.

Fill and natural soils at the locations assessed are not considered to represent an aesthetic concern to the ongoing commercial use of the Site.

Off-Site Disposal Classification

Analytical results reported (by Prensa and Connolly) identified analyte concentrations less than the 'Fill Material' threshold criteria in accordance with EPA Victoria Publication IWRG621 (2009) guidelines, with the exception of total PAH, nickel and fluoride.

A single elevated total PAH concentration was reported during the previous Connolly (2011) assessment which was considered by Connolly to be associated with asphalt fragments within the collected sample and not representative of contamination.

Similarly raised concentrations of nickel were reported in near-surface soil during the Prensa assessment and are considered associated with the presence of basaltic gravels within the soil profile.

Elevated fluoride reported in natural soil during the previous Connolly (2011) assessment was considered to be associated with naturally occurring concentrations.

Based on the analytical results, the fill and natural soils within the areas assessed are classified as **Fill Material** for off-site disposal purposes.

This classification allows for a total volume of up to 5,000 m^3 of soil generated during future construction, refurbishment and/or maintenance works on the Site to be disposed off-site in accordance with EPA Industrial Waste Resource Guidelines. Should additional soil volumes require off-site disposal, further sampling and analysis may be required.

Additional Assessment and/or Remediation

The findings of this DSI suggest that it is not considered necessary for further assessment and/or remediation to be undertaken at the Site.

16 Recommendations

Based on the above findings the following recommendation has been provided:

- The presence of existing buildings on the Site prevented assessment of subsurface conditions across the Site. Should subsurface conditions inconsistent with those described in this report be encountered during future construction, refurbishment and/or maintenance works, advice should be sought from an environmental consultant.

Abbreviations

Abbreviation	Definition
AHD	Australian Height Datum
AMG	Australian Map Grid
ANZECC	Australian & New Zealand Environment & Conservation Council
BaP	Benzo(a)pyrene
BGL	Below Ground Level
BH	Borehole
DEPI	Department of Environment and Primary Industries
DSI	Detailed Site Investigation
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
m	Metres
m^2	Metres squared (area)
MGA	Map Grid Australia
mg/L	Milligrams per Litre
MMBW	Melbourne Metropolitan Board of Works
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PPM	Parts Per Million
PSI	Preliminary Site Investigation
RHSV	Royal Historical Society of Victoria
SEPP	State Environment Protection Policy
SVOC	Semi-volatile Organic Compounds
SWL	Standing Water Level
TEQ	Toxic Equivalency Quotient
TDS	Total Dissolved Solids
TRH	Total Recoverable Hydrocarbons
VOC	Volatile Organic Compounds
VVG	Visualising Victoria's Groundwater

Figures

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Client: Yarra Ranges Council

Project: Detailed Site Investigation

Address: 15 Anderson Street, Lilydale VIC 3140

Drawing Title: Site Locality Plan

Job Number: 19476

Client Number: Y0003

0 10 20 Metres

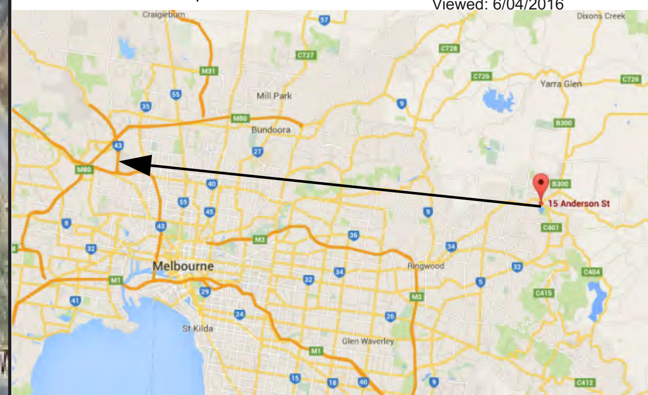
N

Legend

Site Boundary

Index Location Map

Image Source: Google Map
Viewed: 6/04/2016



Note: All locations are approximate

Image Source: Near Map
Viewed: 6/04/2016

Drawn by: MBP		Date: 6/04/2016
Checked by: CXB		Date: 6/04/2016
File Name: 19476_Site Locality	Figure No: 1	Revision: A

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Client: Yarra Ranges Council

Project: Detailed Site Investigation

Address: 15 Anderson Street, Lilydale, Victoria

Drawing Title: Site Features

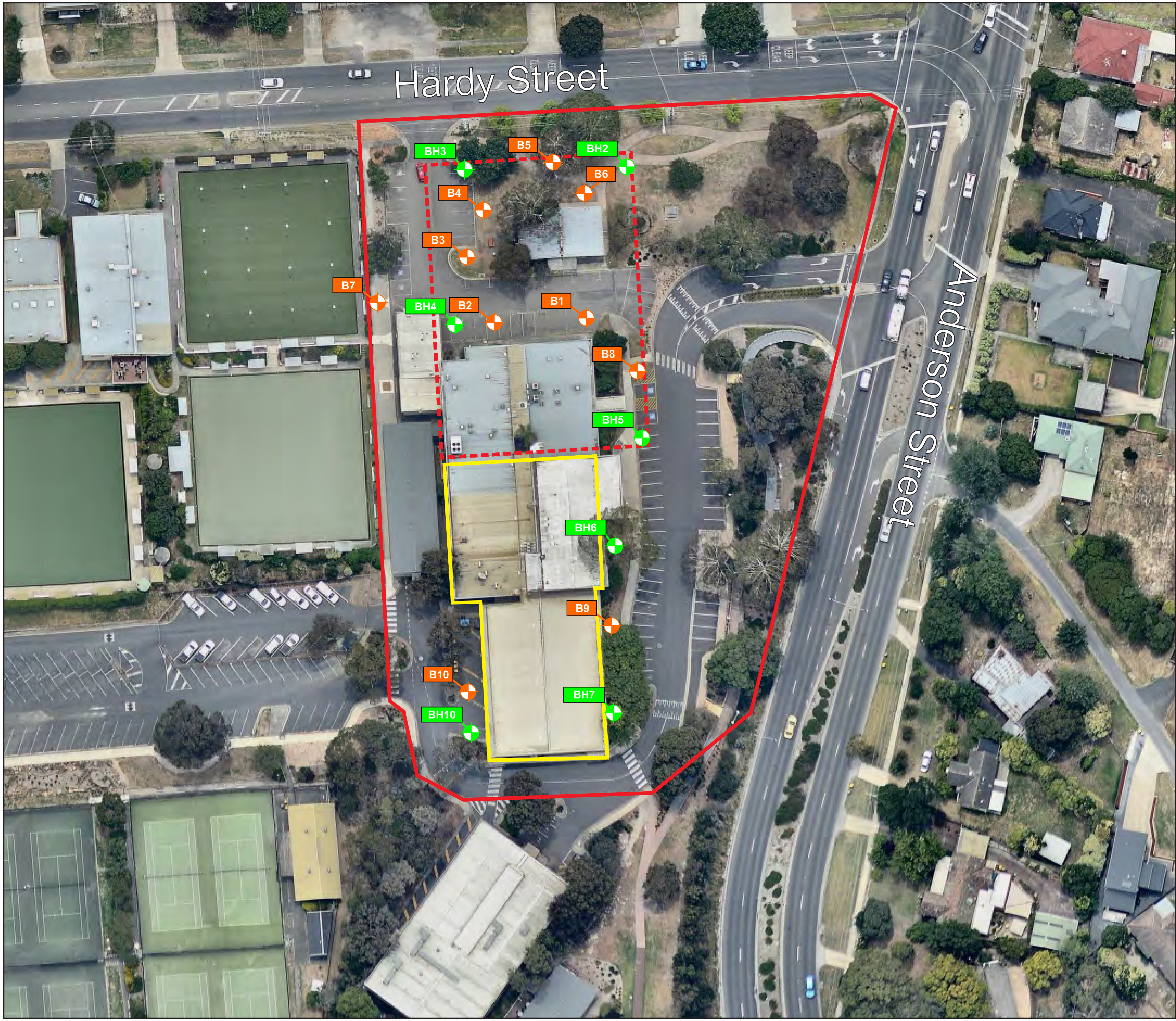
Job Number: 19476 | Client Number: Y0003

N

Note: All locations are approximate

Image Source: Near Map
Viewed: 12 January 2016

Drawn by: MBP		Date: 11/04/2016
Checked by: CXB		Date: 11/04/2016
File Name: 19476_Site Features	Figure No: 2	Revision: A



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Client: Yarra Ranges Council	
Project: Detailed Site Investigation	
Address: 15 Anderson Street, Lilydale VIC 3140	
Drawing Title: Environmental Sampling Location Plan	
Job Number: 19476	Client Number: Y0003

0 10 20 Metres

N

Legend

- Site boundary
- Proposed new building footprint 3,000 sqm
- Proposed building refurbishment & zone of building subsidence
- Connolly (2011) soil sampling locations
- Prensa (2016) soil sampling locations

Note: All locations are approximate

Index Location Map

Image Source: Google Map Viewed: 6/04/2016

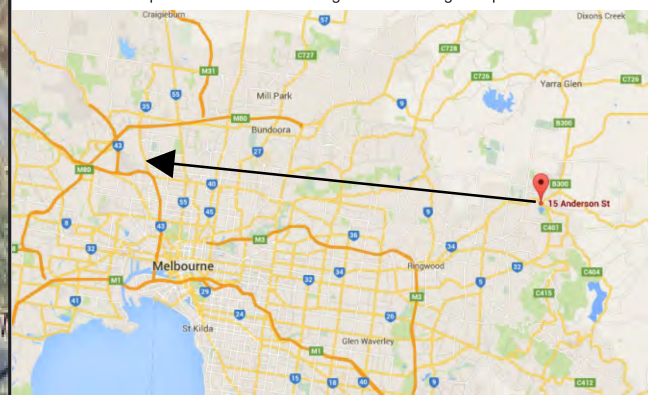


Image Source: Near Map Viewed: 6/04/2016

Drawn by: MBP	Date: 6/04/2016
Checked by: CXB	Date: 6/04/2016
File Name: 19476_Sampling Loc	Figure No: 3	Revision: A

Tables

Field ID	Assessor	Sample Date	Matrix Description	Arsenic	Beryllium	Boron	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc
				Metals																
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beneficial Uses	**EQL**			2	2	10	0.4	1	5	5	5	5	5	0.1	10	5	2	5	10	5
Maintenance of Ecosystems	**NEPM 2013 EILs for Commerical/Industrial**			**160**	**8[5]**		**22[5]**	**1.4[5]**	**87[5]**	**300[5]**	**330|310[3]**	**1800**	**500[6]**	**24[5]**	**40[5]**	**600|420[3]**	**2.9[5]**	**40[5]**	**300[5]**	**1500|1000[3]**
	NEPM 2013 ESLs for Commercial/Industrial, Fine Soils																			
Human Health	*NEPM 2013 HIL D for Commercial/Industrial*			*3000*	*500*	*300000*	*900*	*3600*		*4000*	*240000*	*1500*	*60000*	*730*		*6000*	*10000*			*400000*
	NEPM 2013 HSL D for Commercial/Industrial, Silt Soils																			
	0-1m																			
	1-2m																			
	2-4m																			
	>4m																			
Direct Contact	CRC Care Direct Contact for Commercial/Industrial																			
Buildings & Structures	AS 2159 Piling - Design and Installation (2009)																			
Management Limits	NEPM 2013 Management Limits for Commercial/Industrial, Fine Soils																			
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF SITE)[1]																				
B1/0.2	Connolly	28/11/2011	Fill	8	-	-	<0.2	-	24	-	6	9	-	<0.05	-	12	-	-	-	20
B1/1.0	Connolly	28/11/2011	Natural	<5	-	-	<0.2	-	15	-	<5	12	-	0.05	-	<5	-	-	-	5
B1/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.2	Connolly	28/11/2011	Fill	<5	-	-	0.4	-	5	-	<5	8	-	<0.05	-	<5	-	-	-	36
B2/0.5	Connolly	28/11/2011	Fill	<5	-	-	<0.2	-	8	-	<5	15	-	<0.05	-	<5	-	-	-	<5
B2/1.5	Connolly	28/11/2011	Natural	5	-	-	<0.2	-	9	-	<5	15	-	0.05	-	<5	-	-	-	13
B3/0.2	Connolly	28/11/2011	Fill	<5	-	-	<0.2	-	38	-	49	6	-	<0.05	-	100	-	-	-	52
B3/1.0	Connolly	28/11/2011	Natural	<5	-	-	<0.2	-	9	-	<5	12	-	<0.05	-	<5	-	-	-	<5
B3/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/0.2	Connolly	28/11/2011	Fill	<5	-	-	<0.2	-	8	-	<5	22	-	0.07	-	7	-	-	-	18
B4/1.4	Connolly	28/11/2011	Natural	5	-	-	<0.2	<1	-	-	<5	20	-	0.05	<5	<5	10	<5	<5	11
B5/0.2	Connolly	28/11/2011	Fill	<5	-	-	<0.2	<1	-	-	6	29	-	0.06	<5	<5	<3	<5	<5	22
B5/1.5	Connolly	28/11/2011	Natural	<5	-	-	<0.2	-	19	-	<5	18	-	<0.05	-	<5	-	-	-	<5
B6/0.2	Connolly	28/11/2011	Fill	<5	-	-	<0.2	-	6	-	<5	10	-	<0.05	-	<5	-	-	-	24
B6/0.5	Connolly	28/11/2011	Fill	<5	-	-	<0.2	-	9	-	<5	11	-	<0.05	-	<5	-	-	-	14
B6/1.0	Connolly	28/11/2011	Natural	<5	-	-	<0.2	-	11	-	<5	12	-	<0.05	-	<5	-	-	-	<5
B6/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.2	Connolly	28/11/2011	Fill	<5	-	-	<0.2	-	8	-	5	33	-	<0.05	-	<5	-	-	-	29
B8/0.5	Connolly	28/11/2011	Natural	<5	-	-	<0.2	-	8	-	<5	14	-	<0.05	-	<5	-	-	-	<5
B8/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.2	Prensa	23/03/2016	Fill	8.5	-	-	<0.4	-	8.7	-	5.6	29	-	<0.1	<10	7.5	<2	<5	<10	27
19476_BH2_0.5	Prensa	23/03/2016	Fill	7.3	-	-	<0.4	-	17	-	7.7	9.3	-	<0.1	<10	9	<2	<5	<10	20
19476_BH3_0.3	Prensa	22/03/2016	Fill	17	-	-	<0.4	-	<5	-	<5	<5	-	<0.1	<10	<5	<2	<5	<10	15
19476_BH3_0.5	Prensa	22/03/2016	Natural	12	<2	<10	<0.4	<1	-	<5	5.9	16	92	<0.1	-	12	<2	-	-	13
19476_BH4_0.33	Prensa	23/03/2016	Fill	13	<2	<10	<0.4	<1	-	18	38	12	**640**	<0.1	-	57	<2	-	-	39
19476_BH4_0.55	Prensa	23/03/2016	Natural	17	-	-	<0.4	-	24	-	<5	15	-	<0.1	<10	5.7	<2	<5	<10	10
19476_BH5_0.35	Prensa	24/03/2016	Fill	6.3	<2	<10	<0.4	<1	-	<5	<5	7.5	21	<0.1	-	9.4	<2	-	-	10
19476_BH5_0.5	Prensa	24/03/2016	Natural	8.5	-	-	<0.4	-	17	-	<5	16	-	<0.1	<10	<5	<2	<5	<10	<5
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF SITE)[1]																				
B9/0.2[2]	Connolly	28/11/2011	Fill	6	-	-	2.7	-	25	-	14	20	-	0.08	-	16	-	-	-	37
B9/0.5	Connolly	28/11/2011	Fill	<5	-	-	<0.2	-	52	-	56	<5	-	<0.05	-	100	-	-	-	76
B9/1.0	Connolly	28/11/2011	Natural	<5	-	-	<0.2	-	13	-	<5	11	-	<0.05	-	<5	-	-	-	<5
B9/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/0.2	Connolly	28/11/2011	Fill	<5	-	-	0.3	-	21	-	15	39	-	<0.05	-	21	-	-	-	41
B10/1.0	Connolly	28/11/2011	Natural	<5	-	-	0.5	-	10	-	<5	18	-	0.12	-	10	-	-	-	47
19476_BH6_0.2	Prensa	22/03/2016	Fill	8.4	<2	<10	<0.4	<1	-	6.1	20	28	220	<0.1	-	16	<2	-	-	170
19476_BH6_0.5	Prensa	22/03/2016	Fill	8.9	-	-	<0.4	-	32	-	13	27	-	<0.1	<10	11	<2	<5	<10	75
19476_BH7_0.2	Prensa	23/03/2016	Fill	6.4	<2	<10	<0.4	<1	-	<5	7.8	7.7	53	<0.1	-	8.4	<2	-	-	24
19476_BH7_0.5	Prensa	23/03/2016	Fill	7.3	<2	<10	<0.4	<1	-	<5	<5	16	17	<0.1	-	<5	<2	-	-	<5
19476_BH10_0.3	Prensa	24/03/2016	Fill	13	<2	<10	<0.4	<1	-	23	57	11	**960**	<0.1	-	100	<2	-	-	58
19476_BH10_0.5	Prensa	24/03/2016	Fill	5.3	-	-	<0.4	-	7	-	<5	13	-	<0.1	<10	<5	<2	<5	<10	6.5

Field ID	Conductivity (1:5 aqueous extract)	Chloride	Cyanide (Free)	Moisture Content (dried @ 103°C)	Cation Exchange Capacity	pH (aqueous extract)	pH (Lab) CaCl2 extract	Sulphate as S	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10
	Inorganics								**TRH**									
	uS/cm	mg/kg	mg/kg	%	meq/100g	pH_Units	pH_Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	10	5	5	1	0.5	0.1	0.1	10	50	100	100	50	20	20	50	50	50	20
NEPM 2013 EILs for Commerical/Industrial																	**5000[4]**	
NEPM 2013 ESLs for Commercial/Industrial, Fine Soils										2500	6600	170						
NEPM 2013 HIL D for Commercial/Industrial			*1500*															
NEPM 2013 HSL D for Commercial/Industrial, Silt Soils																		
0-1m												NL						
1-2m												NL						
2-4m												NL						
>4m												NL						
CRC Care Direct Contact for Commercial/Industrial									20000	27000	38000							2600
AS 2159 Piling - Design and Installation (2009)		6000				<5.5		1670										
NEPM 2013 Management Limits for Commercial/Industrial, Fine Soils									1000	5000	10000							800
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF SITE)[1]																		
B1/0.2	-	-	-	-	-	-	-	-	-	-	-	-	<20	45	270	71	386	-
B1/1.0	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND	-
B1/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.2	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND	-
B2/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/1.5	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND	-
B3/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/1.4	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND	-
B5/0.2	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND	-
B5/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.2	-	-	-	8.8	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH2_0.5	-	-	-	10	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH3_0.3	-	-	-	4.5	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH3_0.5	120	90	<5	15	17	8	7.5	12	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH4_0.33	160	17	<5	14	29	8.4	7.6	13	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH4_0.55	-	-	-	27	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH5_0.35	-	-	-	11	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH5_0.5	-	-	-	24	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF SITE)[1]																		
B9/0.2[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/0.2	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND	-
B10/1.0	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND	-
19476_BH6_0.2	190	180	<5	15	26	6.7	-	<10	<50	170	<100	<50	<20	<20	120	120	240	<20
19476_BH6_0.5	-	-	-	12	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH7_0.2	-	-	-	5.5	-	-	-	-	<50	<100	<100	<50	<20	<20	57	<50	57	<20
19476_BH7_0.5	-	100	<5	15	-	7.9	-	15	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH10_0.3	-	-	-	8.2	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20
19476_BH10_0.5	-	-	-	8.4	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	<20

[1]Refer to Figure 2 in the 'Figures' section of this report for a plan of the proposed development site layout and soil sampling locations.

[2]Quality Controls were collected from B9/0.2 and the highest reported concentrations have been adopted.

[3]Site derived EILs calculated for Fill | Natural soils, based on Fill: CEC = 29 and pH = 7.6 and Natural: CEC = 17 and pH = 7.5.

[4]EILs from Dutch Soil Remediation Circular (2013)

[5]EILs from Canadian Environmental Quality Guidelines (Commercial)

[6]EILs from ANZECC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, Investigation B levels (1992)

NL - Not Limiting.

				BTEX							MAH				PAH/Phenols																						Solvents				
				Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 less BTEX (F1)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	Styrene	2-methylphenol	3-&4-methylphenol	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(a)pyrene TEQ	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Phenol	Picloram	Pyrene	Methyl Ethyl Ketone	4-Methyl-2-pentanone	Acetone	Allyl chloride	Carbon disulfide
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beneficial Uses	**EQL**			0.1	0.1	0.1	0.2	0.1	0.3	20	0.05	0.05	0.05	0.05	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.05	0.05	0.05	0.05	0.05
Maintenance of Ecosystems	**NEPM 2013 EILs for Commerical/Industrial**																														**370**										
	NEPM 2013 ESLs for Commercial/Industrial, Fine Soils			95	185	135			95	215											1.4																				
Human Health	*NEPM 2013 HIL D for Commercial/Industrial*																					*40*										*4000*		*240000*	*35000*						
	NEPM 2013 HSL D for Commercial/Industrial, Silt Soils																																								
	0-1m			4	NL	NL			NL	250																					NL										
	1-2m			4	NL	NL			NL	360																					NL										
	2-4m			6	NL	NL			NL	590																					NL										
	>4m			10	NL	NL			NL	NL																					NL										
Direct Contact	CRC Care Direct Contact for Commercial/Industrial			430	27000	99000			81000																																
Buildings & Structures	AS 2159 Piling - Design and Installation (2009)																																								
Management Limits	NEPM 2013 Management Limits for Commercial/Industrial, Fine Soils																																								
Field ID	**Assessor**	**Sample Date**	**Matrix Description**																																						
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF SITE)(1)																																									
B1/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	1.6	2	1.3	0.8	-	-	0.4	0.7	0.9	0.2	3.9	2.1	0.4	5.9	30	5.7	-	-	2.7	-	-	-	-	-
B1/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	0.1	0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	0.3	0.1	<0.1	0.2	1.4	0.4	-	-	0.2	-	-	-	-	-
B1/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	-	-	<0.1	-	-	-	-	-
B2/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	-	-	<0.1	-	-	-	-	-
B2/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	-	-	<0.1	-	-	-	-	-
B3/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	-	-	<0.1	-	-	-	-	-
B3/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/1.4	Connolly	28/11/2011	Natural	<0.5	<0.5	<0.5	-	-	<0.5	-	<0.5	-	-	<0.5	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.5	-	<0.1	-	-	-	-	-
B5/0.2	Connolly	28/11/2011	Fill	<0.5	<0.5	<0.5	-	-	<0.5	-	<0.5	-	-	<0.5	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.5	-	<0.1	-	-	-	-	-
B5/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.2	Prensa	23/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH2_0.5	Prensa	23/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH3_0.3	Prensa	22/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH3_0.5	Prensa	22/03/2016	Natural	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<0.05	<0.05	<0.05	<0.05	<0.2	<0.4	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH4_0.33	Prensa	23/03/2016	Fill	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<0.05	<0.05	<0.05	<0.05	<0.2	<0.4	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH4_0.55	Prensa	23/03/2016	Natural	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH5_0.35	Prensa	24/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH5_0.5	Prensa	24/03/2016	Natural	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF SITE)(1)																																									
B9/0.2(2)	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	0.1	0.1	-	-	<0.1	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.7	<0.1	-	-	0.2	-	-	-	-	-
B9/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	0.1	0.1	-	-	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	-	-	<0.1	-	-	-	-	-
B10/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	-	-	<0.1	-	-	-	-	-
19476_BH6_0.2	Prensa	22/03/2016	Fill	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<0.05	<0.05	<0.05	<0.05	<0.2	<0.4	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH6_0.5	Prensa	22/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH7_0.2	Prensa	23/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH7_0.5	Prensa	23/03/2016	Fill	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<0.05	<0.05	<0.05	<0.05	<0.2	<0.4	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH10_0.3	Prensa	24/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-
19476_BH10_0.5	Prensa	24/03/2016	Fill	-	-	-	-	-	-	<20	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-

(1) Refer to Figure 2 in the 'Figures' section of this report for a plan of the proposed development site layout and soil :

(2) Quality Controls were collected from B9/0.2 and the highest reported concentrations have been adopted.

(3) Site derived EILs calculated for Fill | Natural soils, based on Fill: CEC = 29 and pH = 7.6 and Natural: CEC = 17 and pl

(4) EILs from Dutch Soil Remediation Circular (2013)

(5) EILs from Canadian Environmental Quality Guidelines (Commercial)

(6) EILs from ANZECC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated S

NL - Not Limiting.

				Organophosphorous Pesticides																			Organochlorine Pesticides																					
				Azinophos methyl	Bolstar (Sulprofos)	Chlorpyrifos	Demeton-O	Diazinon	Dichlorvos	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Naled (Dibrom)	Phorate	Ronnel	Trichloronate	4,4-DDE	a-BHC	Aldrin	b-BHC	cis-chlordane	trans-chlordane	chlordane	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beneficial Uses	**EQL**			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.05	0.05	0.05	0.05			0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	1
Maintenance of Ecosystems	**NEPM 2013 EILs for Commerical/Industrial**																																											
	NEPM 2013 ESLs for Commerical/Industrial, Fine Soils																															**640**												
Human Health	*NEPM 2013 HIL D for Commercial/Industrial*					*2000*																							*530*								*100*				*50*		*2500*	*160*
	NEPM 2013 HSL D for Commercial/Industrial, Silt Soils																																											
	0-1m																																											
	1-2m																																											
	2-4m																																											
	>4m																																											
Direct Contact	CRC Care Direct Contact for Commercial/Industrial																																											
Buildings & Structures	AS 2159 Piling - Design and Installation (2009)																																											
Management Limits	NEPM 2013 Management Limits for Commercial/Industrial, Fine Soils																																											
Field ID	**Assessor**	**Sample Date**	**Matrix Description**																																									
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF SITE)[1]																																												
B1/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B1/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B3/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B3/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/1.4	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B5/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B5/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B6/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B6/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B8/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.2	Prensa	23/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH2_0.5	Prensa	23/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH3_0.3	Prensa	22/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH3_0.5	Prensa	22/03/2016	Natural	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05	-	<0.05	<1
19476_BH4_0.33	Prensa	23/03/2016	Fill	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05	-	<0.05	<1
19476_BH4_0.55	Prensa	23/03/2016	Natural	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH5_0.35	Prensa	24/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH5_0.5	Prensa	24/03/2016	Natural	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF SITE)[1]																																												
B9/0.2[2]	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
B9/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
19476_BH6_0.2	Prensa	22/03/2016	Fill	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.05	-	-	-	<0.1	-	<0.05	<0.05	0.53	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05	-	<0.05	<1
19476_BH6_0.5	Prensa	22/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH7_0.2	Prensa	23/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH7_0.5	Prensa	23/03/2016	Fill	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05	-	<0.05	<1
19476_BH10_0.3	Prensa	24/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
19476_BH10_0.5	Prensa	24/03/2016	Fill	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1

[1]Refer to Figure 2 in the 'Figures' section of this report for a plan of the proposed development site layout and soil :
[2]Quality Controls were collected from B9/0.2 and the highest reported concentrations have been adopted.
[3]Site derived EILs calculated for Fill | Natural soils, based on Fill: CEC = 29 and pH = 7.6 and Natural: CEC = 17 and pl
[4]EILs from Dutch Soil Remediation Circular (2013)
[5]EILs from Canadian Environmental Quality Guidelines (Commercial)
[6]EILs from ANZECC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated S
NL - Not Limiting.

				Herbicides						Pesticides
				2,4,5-Trichlorophenoxy Acetic Acid	Hedonal	Atrazine	2-Methyl-4-chlorophenoxyacetic acid	2-Methyl-4-Chlorophenoxy Butanoic Acid	Mecoprop	Mirex
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beneficial Uses	**EQL**			0.5	0.5	0.2	0.5	0.5	0.5	0.01
Maintenance of Ecosystems	**NEPM 2013 EILs for Commerical/Industrial**									
	NEPM 2013 ESLs for Commercial/Industrial, Fine Soils									
Human Health	*NEPM 2013 HIL D for Commercial/Industrial*			*5000*	*9000*	*2500*	*5000*	*5000*	*5000*	*100*
	NEPM 2013 HSL D for Commercial/Industrial, Silt Soils									
	0-1m									
	1-2m									
	2-4m									
	>4m									
Direct Contact	CRC Care Direct Contact for Commercial/Industrial									
Buildings & Structures	AS 2159 Piling - Design and Installation (2009)									
Management Limits	NEPM 2013 Management Limits for Commercial/Industrial, Fine Soils									
Field ID	**Assessor**	**Sample Date**	**Matrix Description**							
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF SITE)[1]										
B1/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B1/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B1/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B2/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B2/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B2/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B3/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B3/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B3/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B4/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B4/1.4	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B5/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B5/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B6/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B6/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B6/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B6/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B8/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B8/0.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B8/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
19476_BH2_0.2	Prensa	23/03/2016	Fill	-	-	-	-	-	-	-
19476_BH2_0.5	Prensa	23/03/2016	Fill	-	-	-	-	-	-	-
19476_BH3_0.3	Prensa	22/03/2016	Fill	-	-	-	-	-	-	-
19476_BH3_0.5	Prensa	22/03/2016	Natural	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.01
19476_BH4_0.33	Prensa	23/03/2016	Fill	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.01
19476_BH4_0.55	Prensa	23/03/2016	Natural	-	-	-	-	-	-	-
19476_BH5_0.35	Prensa	24/03/2016	Fill	-	-	-	-	-	-	-
19476_BH5_0.5	Prensa	24/03/2016	Natural	-	-	-	-	-	-	-
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF SITE)[1]										
B9/0.2[2]	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B9/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B9/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B9/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
B10/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-
B10/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-
19476_BH6_0.2	Prensa	22/03/2016	Fill	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.05
19476_BH6_0.5	Prensa	22/03/2016	Fill	-	-	-	-	-	-	-
19476_BH7_0.2	Prensa	23/03/2016	Fill	-	-	-	-	-	-	-
19476_BH7_0.5	Prensa	23/03/2016	Fill	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.01
19476_BH10_0.3	Prensa	24/03/2016	Fill	-	-	-	-	-	-	-
19476_BH10_0.5	Prensa	24/03/2016	Fill	-	-	-	-	-	-	-

	Chlorinated Hydrocarbons																										
	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 EILs for Commerical/Industrial																											
NEPM 2013 ESLs for Commercial/Industrial, Fine Soils																											
NEPM 2013 HIL D for Commercial/Industrial																											
NEPM 2013 HSL D for Commercial/Industrial, Silt Soils																											
0-1m																											
1-2m																											
2-4m																											
>4m																											
CRC Care Direct Contact for Commercial/Industrial																											
AS 2159 Piling - Design and Installation (2009)																											
NEPM 2013 Management Limits for Commercial/Industrial, Fine Soils																											
Field ID																											
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF SITE)[1]																											
B1/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
B5/0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
B5/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH3_0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH3_0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH4_0.33	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH4_0.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH5_0.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH5_0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF SITE)[1]																											
B9/0.2[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH6_0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH6_0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH7_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH7_0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19476_BH10_0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH10_0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(1)Refer to Figure 2 in the 'Figures' section of this report for a plan of the proposed development site layout and soil
(2)Quality Controls were collected from B9/0.2 and the highest reported concentrations have been adopted.
(3)Site derived EILs calculated for Fill | Natural soils, based on Fill: CEC = 29 and pH = 7.6 and Natural: CEC = 17 and pH
(4)EILs from Dutch Soil Remediation Circular (2013)
(5)EILs from Canadian Environmental Quality Guidelines (Commercial)
(6)EILs from ANZECC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated S
NL - Not Limiting.

Table 1: Soil Results - NEPM 2013

prensa

				Halogenated Benzenes							Halogenated Hydrocarbons					Halogenated Phenols	Polychlorinated Biphenyls							
				1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	4-chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	Pentachlorophenol	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beneficial Uses	**EQL**			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Maintenance of Ecosystems	**NEPM 2013 EILs for Commerical/Industrial**																							
	NEPM 2013 ESLs for Commercial/Industrial, Fine Soils																							
Human Health	*NEPM 2013 HIL D for Commercial/Industrial*									*80*						*660*								*7*
	NEPM 2013 HSL D for Commercial/Industrial, Silt Soils																							
	0-1m																							
	1-2m																							
	2-4m																							
	>4m																							
Direct Contact	CRC Care Direct Contact for Commercial/Industrial																							
Buildings & Structures	AS 2159 Piling - Design and Installation (2009)																							
Management Limits	NEPM 2013 Management Limits for Commercial/Industrial, Fine Soils																							
Field ID	**Assessor**	**Sample Date**	**Matrix Description**																					
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF SITE)[1]																								
B1/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/1.4	Connolly	28/11/2011	Natural	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.5	-	-	-	<2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
B5/0.2	Connolly	28/11/2011	Fill	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.5	-	-	-	<2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
B5/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.2	Prensa	23/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.5	Prensa	23/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH3_0.3	Prensa	22/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH3_0.5	Prensa	22/03/2016	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
19476_BH4_0.33	Prensa	23/03/2016	Fill	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
19476_BH4_0.55	Prensa	23/03/2016	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH5_0.35	Prensa	24/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH5_0.5	Prensa	24/03/2016	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF SITE)[1]																								
B9/0.2[2]	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/0.5	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/0.2	Connolly	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/1.0	Connolly	28/11/2011	Natural	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH6_0.2	Prensa	22/03/2016	Fill	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
19476_BH6_0.5	Prensa	22/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH7_0.2	Prensa	23/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH7_0.5	Prensa	23/03/2016	Fill	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
19476_BH10_0.3	Prensa	24/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH10_0.5	Prensa	24/03/2016	Fill	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(1) Refer to Figure 2 in the 'Figures' section of this report for a plan of the proposed development site layout and soil s
(2) Quality Controls were collected from B9/0.2 and the highest reported concentrations have been adopted.
(3) Site derived EILs calculated for Fill | Natural soils, based on Fill: CEC = 29 and pH = 7.6 and Natural: CEC = 17 and pl
(4) EILs from Dutch Soil Remediation Circular (2013)
(5) EILs from Canadian Environmental Quality Guidelines (Commercial)
(6) EILs from ANZECC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated S
NL - Not Limiting.

Field ID	Assessor	Sample Date	Matrix Description	Metals												Inorganics			
				Arsenic	Cadmium	Chromium (hexavalent)	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc	pH (aqueous extract)	pH (Lab) CaCl2 extract	Fluoride	Cyanide Total
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH_Units	pH_Units	mg/kg	mg/kg
EQL				2	0.4	1	5	5	0.1	10	5	2	5	10	5	0.1	0.1	100	5
IWRG621 Category B Upper Limits				2000	400	2000	20000	6000	300	4000	12000	200	720		140000	≤2 or >12.5	≤2 or >12.5	40,000	10,000
IWRG621 Category C Upper Limits				500	100	500	5000	1500	75	1000	3000	50	180	500	35000			10,000	2500
IWRG621 Fill Material Upper Limits				20	3	1	100	300	1	40	60	10	10	50	200	≤4 or ≥9	≤4 or ≥9	450	50
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF THE SITE)[(1)]																			
B1/0.2	Connolly	28/11/2011	Fill	8	<0.2	-	6	9	<0.05	-	12	-	-	-	20	-	-	-	-
B1/1.0	Connolly	28/11/2011	Natural	<5	<0.2	-	<5	12	0.05	-	<5	-	-	-	5	-	-	-	-
B1/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	440	-
B2/0.2	Connolly	28/11/2011	Fill	<5	0.4	-	<5	8	<0.05	-	<5	-	-	-	36	-	-	-	-
B2/0.5	Connolly	28/11/2011	Fill	<5	<0.2	-	<5	15	<0.05	-	<5	-	-	-	<5	-	-	-	-
B2/1.5	Connolly	28/11/2011	Natural	5	<0.2	-	<5	15	0.05	-	<5	-	-	-	13	-	-	460	-
B3/0.2	Connolly	28/11/2011	Fill	<5	<0.2	-	49	6	<0.05	-	100	-	-	-	52	-	-	-	-
B3/1.0	Connolly	28/11/2011	Natural	<5	<0.2	-	<5	12	<0.05	-	<5	-	-	-	<5	-	-	-	-
B3/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640	-
B4/0.2	Connolly	28/11/2011	Fill	<5	<0.2	-	<5	22	0.07	-	7	-	-	-	18	-	-	-	-
B4/1.4	Connolly	28/11/2011	Natural	5	<0.2	<1	<5	20	0.05	<5	<5	10	<5	<5	11	-	-	960	<5
B5/0.2	Connolly	28/11/2011	Fill	<5	<0.2	<1	6	29	0.06	<5	<5	<3	<5	<5	22	-	-	<100	<5
B5/1.5	Connolly	28/11/2011	Natural	<5	<0.2	-	<5	18	<0.05	-	<5	-	-	-	<5	-	-	300	-
B6/0.2	Connolly	28/11/2011	Fill	<5	<0.2	-	<5	10	<0.05	-	<5	-	-	-	24	-	-	-	-
B6/0.5	Connolly	28/11/2011	Fill	<5	<0.2	-	<5	11	<0.05	-	<5	-	-	-	14	-	-	-	-
B6/1.0	Connolly	28/11/2011	Natural	<5	<0.2	-	<5	12	<0.05	-	<5	-	-	-	<5	-	-	-	-
B6/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	-
B8/0.2	Connolly	28/11/2011	Fill	<5	<0.2	-	5	33	<0.05	-	<5	-	-	-	29	-	-	-	-
B8/0.5	Connolly	28/11/2011	Natural	<5	<0.2	-	<5	14	<0.05	-	<5	-	-	-	<5	-	-	-	-
B8/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-
19476_BH2_0.2	Prensa	23/03/2016	Fill	8.5	<0.4	-	5.6	29	<0.1	<10	7.5	<2	<5	<10	27	-	-	-	-
19476_BH2_0.5	Prensa	23/03/2016	Fill	7.3	<0.4	-	7.7	9.3	<0.1	<10	9	<2	<5	<10	20	-	-	-	-
19476_BH3_0.3	Prensa	22/03/2016	Fill	17	<0.4	-	<5	<5	<0.1	<10	<5	<2	<5	<10	15	-	-	-	-
19476_BH3_0.5	Prensa	22/03/2016	Natural	12	<0.4	<1	5.9	16	<0.1	-	12	<2	-	-	13	8	7.5	-	12
19476_BH4_0.33	Prensa	23/03/2016	Fill	13	<0.4	<1	38	12	<0.1	-	57	<2	-	-	39	8.4	7.6	-	13
19476_BH4_0.55	Prensa	23/03/2016	Natural	17	<0.4	-	<5	15	<0.1	<10	5.7	<2	<5	<10	10	-	-	-	-
19476_BH5_0.35	Prensa	24/03/2016	Fill	6.3	<0.4	<1	<5	7.5	<0.1	-	9.4	<2	-	-	10	-	-	-	-
19476_BH5_0.5	Prensa	24/03/2016	Natural	8.5	<0.4	-	<5	16	<0.1	<10	<5	<2	<5	<10	<5	-	-	-	-
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF THE SITE)[(1)]																			
B9/0.2[(2)]	Connolly	28/11/2011	Fill	6	2.7	-	14	20	0.08	-	16	-	-	-	37	-	-	-	-
B9/0.5	Connolly	28/11/2011	Fill	<5	<0.2	-	56	<5	<0.05	-	100	-	-	-	76	-	-	-	-
B9/1.0	Connolly	28/11/2011	Natural	<5	<0.2	-	<5	11	<0.05	-	<5	-	-	-	<5	-	-	-	-
B9/1.5	Connolly	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	-
B10/0.2	Connolly	28/11/2011	Fill	<5	0.3	-	15	39	<0.05	-	21	-	-	-	41	-	-	-	-
B10/1.0	Connolly	28/11/2011	Natural	<5	0.5	-	<5	18	0.12	-	10	-	-	-	47	-	-	800	-
19476_BH6_0.2	Prensa	22/03/2016	Fill	8.4	<0.4	<1	20	28	<0.1	-	16	<2	-	-	170	6.7	-	-	<10
19476_BH6_0.5	Prensa	22/03/2016	Fill	8.9	<0.4	-	13	27	<0.1	<10	11	<2	<5	<10	75	-	-	-	-
19476_BH7_0.2	Prensa	23/03/2016	Fill	6.4	<0.4	<1	7.8	7.7	<0.1	-	8.4	<2	-	-	24	-	-	-	-
19476_BH7_0.5	Prensa	23/03/2016	Fill	7.3	<0.4	<1	<5	16	<0.1	-	<5	<2	-	-	<5	7.9	-	-	15
19476_BH10_0.3	Prensa	24/03/2016	Fill	13	<0.4	<1	57	11	<0.1	-	100	<2	-	-	58	-	-	-	-
19476_BH10_0.5	Prensa	24/03/2016	Fill	5.3	<0.4	-	<5	13	<0.1	<10	<5	<2	<5	<10	6.5	-	-	-	-

Field ID	Phenols		MAH		PAH		TRH		PCB	Chlorinated Hydrocarbons				OCP					
	Phenols (non-halogenated)	Phenols(halogenated)	Benzene	Monocylic aromatic hydrocarbons	Benzo(a) pyrene	PAHs (Sum of total)	C6 - C9	+C10 - C36 (Sum of total)	PCBs (Sum of total)	Hexachlorobutadiene	Vinyl chloride	Chlorinated hydrocarbons	Other chlorinated hydrocarbons	Organochlorine pesticides	Other organochlorine pesticides	DDT+DDD+DDE	Aldrin + Dieldrin	Heptachlor	chlordane
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1		0.5	0.5	20	50	0.1	0.2	0.05							0.05	0.1
IWRG621 Category B Upper Limits	2200	320	16	240	20	400	2600	40000	0	11	4.8		50		50	50	4.8	4.8	16
IWRG621 Category C Upper Limits	560	10	4	70	5	100	650	10000	0	2.8	1.2		10		10	50	1.2	1.2	4
IWRG621 Fill Material Upper Limits	60	1	1	7	1	20	100	1000	2			1		1					
PROPOSED NEW BUILDING FOOTPRINT (NORTHERN PORTION OF THE SITE)[(1)]																			
B1/0.2	-	-	-	-	0.8	30	<20	386	-	-	-	-	-	-	-	-	-	-	-
B1/1.0	-	-	-	-	<0.1	1.4	<20	ND	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
B1/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/0.2	-	-	-	-	<0.1	ND	<20	ND	-	-	-	-	-	-	-	-	-	-	-
B2/0.5	-	-	-	-	<0.1	ND	-	-	-	-	-	-	-	-	-	-	-	-	-
B2/1.5	-	-	-	-	<0.1	ND	<20	ND	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
B3/0.2	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
B3/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4/1.4	ND	ND	<0.5	ND	<0.1	ND	<20	ND	ND	<0.1	<1	ND	ND	ND	ND	<0.15	<0.1	<0.05	<0.05
B5/0.2	ND	ND	<0.5	ND	<0.1	ND	<20	ND	ND	<0.1	<1	ND	ND	ND	ND	<0.15	<0.1	<0.05	<0.05
B5/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
B6/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
B6/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
B8/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19476_BH2_0.2	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH2_0.5	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH3_0.3	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH3_0.5	<0.7	<1	<0.1	<0.65	<0.5	<7.5	<20	<50	<0.1	-	<0.05	<0.7	<0.65	<0.7	<0.45	<0.15	<0.15	<0.05	<0.1
19476_BH4_0.33	<0.7	<1	<0.1	<0.65	<0.5	<7.5	<20	<50	<0.1	-	<0.05	<0.7	<0.65	<0.7	<0.45	<0.15	<0.15	<0.05	<0.1
19476_BH4_0.55	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH5_0.35	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH5_0.5	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
PROPOSED BUILDING REFURBISHMENT (SOUTHERN PORTION OF THE SITE)[(1)]																			
B9/0.2[(2)]	-	-	-	-	0.1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9/1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
B9/1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10/0.2	-	-	-	-	0.1	0.6	<20	ND	-	-	-	-	-	-	-	-	-	-	-
B10/1.0	-	-	-	-	<0.1	ND	<20	ND	-	-	-	-	-	ND	ND	<0.15	<0.1	<0.05	<0.05
19476_BH6_0.2	<0.7	<1	<0.1	<0.65	<0.5	<7.5	<20	240	<0.1	-	<0.05	<0.7	<0.65	0.53	<0.45	<0.2	0.53	<0.05	<0.1
19476_BH6_0.5	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH7_0.2	-	-	-	-	<0.5	<7.5	<20	57	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH7_0.5	<0.7	<1	<0.1	<0.65	<0.5	<7.5	<20	<50	<0.1	-	<0.05	<0.7	<0.65	<0.7	<0.45	<0.15	<0.15	<0.05	<0.1
19476_BH10_0.3	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1
19476_BH10_0.5	-	-	-	-	<0.5	<7.5	<20	<50	-	-	-	-	-	<1	<0.75	<0.15	<0.15	<0.05	<0.1

[(1)]Refer to Figure 2 in the 'Figures' section of this report for a plan of the proposed development site layout adnd soil sampling locations. [(2)]Quality Controls were collected from B9/0.2 and the highest reported concentrations have been adopted.

Chem Group	Chem Name	Units	EQL	19476_BH2_0.2	19476_QC1	RPD	19476_BH2_0.2	19476_QC2	RPD
			Field ID	19476_BH2_0.2	19476_QC1	**RPD**	19476_BH2_0.2	19476_QC2	**RPD**
			Sample Type	Primary	Blind Replicate Sample		Primary	Split Sample	
			Sampled Date/Time	23/03/2016	23/03/2016		23/03/2016	23/03/2016	
Chem Group	**Chem Name**	**Units**	**EQL**						
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	**1.2**	**<0.5**	**+82**
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0	0.6	<0.5	18
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5		
BTEX	C6-C10 less BTEX (F1)	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
Inorganics	Moisture Content (dried @ 103°C)	%	1	8.8	11.0	22	8.8		
Lead	Lead	mg/kg	5 (Primary): 1 (Interlab)	29.0	35.0	19	29.0	31.0	7
Metals	Arsenic	mg/kg	2 (Primary): 4 (Interlab)	8.5	8.6	1	**8.5**	**<4.0**	**+72**
	Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0
	Chromium (III+VI)	mg/kg	5 (Primary): 1 (Interlab)	8.7			8.7	11.0	23
	Copper	mg/kg	5 (Primary): 1 (Interlab)	5.6	6.5	15	5.6	5.0	11
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	5 (Primary): 1 (Interlab)	7.5	8.4	11	7.5	6.0	22
	Selenium	mg/kg	2	<2.0	<2.0	0	<2.0		
	Zinc	mg/kg	5 (Primary): 1 (Interlab)	27.0	32.0	17	27.0	30.0	11
PAH	Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5		
PAH/Phenols	Acenaphthene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Acenaphthylene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Benz(a)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Benzo(a) pyrene	mg/kg	0.5 (Primary): 0.05 (Interlab)	<0.5	<0.5	0	<0.5	<0.05	0
	Benzo(g,h,i)perylene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5		
	Chrysene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Dibenz(a,h)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Fluoranthene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Fluorene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	PAHs (Sum of total)	mg/kg	0.5 (Primary): 0.05 (Interlab)	<0.5	<0.5	0	<0.5	<0.05	0
	Phenanthrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
TRH	C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
	C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
	F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C6 - C9	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C10 - C14	mg/kg	20 (Primary): 50 (Interlab)	<20.0	<20.0	0	<20.0	<50.0	0
	C15 - C28	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0
	C29-C36	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0
	+C10 - C36 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C6-C10	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Table 4: Blank Analytical Results

			Field ID	19476_R1	19476_TB1
			Sample Date	23/03/2016	23/03/2016
			Sample Type	Rinsate	Trip Blank
Chem Group	**Chem Name**	**Units**	**EQL**		
BTEX	C6-C10 less BTEX (F1)	mg/l	0.02	<0.02	
Metals	Arsenic	mg/l	0.001	<0.001	
	Beryllium	mg/l	0.001	<0.001	
	Boron	mg/l	0.05	<0.05	
	Cadmium	mg/l	0.0002	<0.0002	
	Chromium (hexavalent)	mg/l	0.001	<0.001	
	Cobalt	mg/l	0.001	<0.001	
	Copper	mg/l	0.001	<0.001	
	Lead	mg/l	0.001	<0.001	
	Manganese	mg/l	0.005	<0.005	
	Mercury	mg/l	0.0001	<0.0001	
	Nickel	mg/l	0.001	<0.001	
	Selenium	mg/l	0.001	<0.001	
	Zinc	mg/l	0.001	<0.001	
PAH/Phenols	Acenaphthene	µg/l	1	<1	
	Acenaphthylene	µg/l	1	<1	
	Anthracene	µg/l	1	<1	
	Benz(a)anthracene	µg/l	1	<1	
	Benzo(a) pyrene	µg/l	1	<1	
	Benzo(b+j)fluoranthene	mg/l	0.001	<0.001	
	Benzo(g,h,i)perylene	µg/l	1	<1	
	Benzo(k)fluoranthene	µg/l	1	<1	
	Chrysene	µg/l	1	<1	
	Dibenz(a,h)anthracene	µg/l	1	<1	
	Fluoranthene	µg/l	1	<1	
	Fluorene	µg/l	1	<1	
	Indeno(1,2,3-c,d)pyrene	µg/l	1	<1	
	Naphthalene	µg/l	1	<10	
	PAHs (Sum of total)	µg/l	1	<1	
	Phenanthrene	µg/l	1	<1	
	Pyrene	µg/l	1	<1	
TRH	C10-C16	mg/l	0.05	<0.05	
	C16-C34	mg/l	0.1	<0.1	
	C34-C40	mg/l	0.1	<0.1	
	F2-NAPHTHALENE	mg/l	0.05	<0.05	
	C6 - C9	µg/l	20	<20	<20
	C10 - C14	µg/l	50	<50	
	C15 - C28	µg/l	100	<100	
	C29-C36	µg/l	100	<100	
	+C10 - C36 (Sum of total)	µg/l	100	<100	
	C6-C10	mg/l	0.02	<0.02	

Appendix A: Planning Property Reports

Property Report from www.land.vic.gov.au on 11 August 2015 03:35 PM

Lot and Plan Number: Lot 1 PS546467
Address: See table below.
Standard Parcel Identifier (SPI): 1\PS546467
Local Government (Council): YARRA RANGES **Council Property Number:** 247225
Directory Reference: Melway 38 F5

Note: There are 18 properties identified for this site.
These can include units (or car spaces), shops, or part or whole floors of a building.
Dimensions for these individual properties are generally not available.

Note: This parcel is part of a property. For property details get the free Basic Property Report at Property Reports

This parcel is not in a designated bushfire prone area.
No special bushfire construction requirements apply. Planning provisions may apply.

Further information about the building control system and building in bushfire prone areas can be found in the Building Commission section of the Victorian Building Authority website www.vba.vic.gov.au

Address Details

These addresses have been found for this property

Address
11 ANDERSON STREET LILYDALE 3140
13 ANDERSON STREET LILYDALE 3140
15 ANDERSON STREET LILYDALE 3140
15A ANDERSON STREET LILYDALE 3140
15B ANDERSON STREET LILYDALE 3140
15C ANDERSON STREET LILYDALE 3140
15D ANDERSON STREET LILYDALE 3140
15E ANDERSON STREET LILYDALE 3140
15F ANDERSON STREET LILYDALE 3140

Address
15G ANDERSON STREET LILYDALE 3140
15H ANDERSON STREET LILYDALE 3140
15I ANDERSON STREET LILYDALE 3140
15J ANDERSON STREET LILYDALE 3140
5 HARDY STREET LILYDALE 3140
7 HARDY STREET LILYDALE 3140
13 HARDY STREET LILYDALE 3140
15 HARDY STREET LILYDALE 3140
17 HARDY STREET LILYDALE 3140

Parcel Details

This is 1 parcel of 4 parcels comprising the property.The parcel searched for is marked with an * in the table below.

Lot/Plan or Crown Description	SPI
Lot 1 PS546466	1\PS546466
*Lot 1 PS546467	1\PS546467

Lot/Plan or Crown Description	SPI
PARISH OF YERING Allot. 10A Sec. 29	10A~29\PP3988
Allot. 10B Sec. 29	10B~29\PP3988

State Electorates

Legislative Council: EASTERN VICTORIA
Legislative Assembly: EVELYN

Utilities

Rural Water Business: Southern Rural Water
Metro Water Business: Yarra Valley Water Ltd
Melbourne Water: inside drainage boundary
Power Distributor: AUSNET (Information about choosing an electricity retailer)

Planning information continued on next page

Planning Zone Summary

Planning Zone: PUBLIC USE ZONE - LOCAL GOVERNMENT (PUZ6)
SCHEDULE TO THE PUBLIC USE ZONE - LOCAL GOVERNMENT

Planning Overlays: LAND SUBJECT TO INUNDATION OVERLAY (LSIO)
LAND SUBJECT TO INUNDATION OVERLAY SCHEDULE (LSIO)
PUBLIC ACQUISITION OVERLAY (PAO)
PUBLIC ACQUISITION OVERLAY 9 SCHEDULE (PAO9)

Areas of Aboriginal Cultural Heritage Sensitivity:
This parcel is within, or affected by, one or more areas of cultural heritage sensitivity

Planning scheme data last updated on 6 August 2015.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State, local, particular and general provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting Planning Schemes Online

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the Planning & Environment Act 1987. It does not include information about exhibited planning scheme amendments, or zonings that may abut the land. To obtain a Planning Certificate go to Titles and Property Certificates

The Planning Property Report includes separate maps of zones and overlays

For details of surrounding properties, use this service to get the Reports for properties of interest

To view planning zones, overlay and heritage information in an interactive format visit Planning Maps Online

For other information about planning in Victoria visit www.dpcd.vic.gov.au/planning

Areas of Aboriginal Cultural Heritage Sensitivity

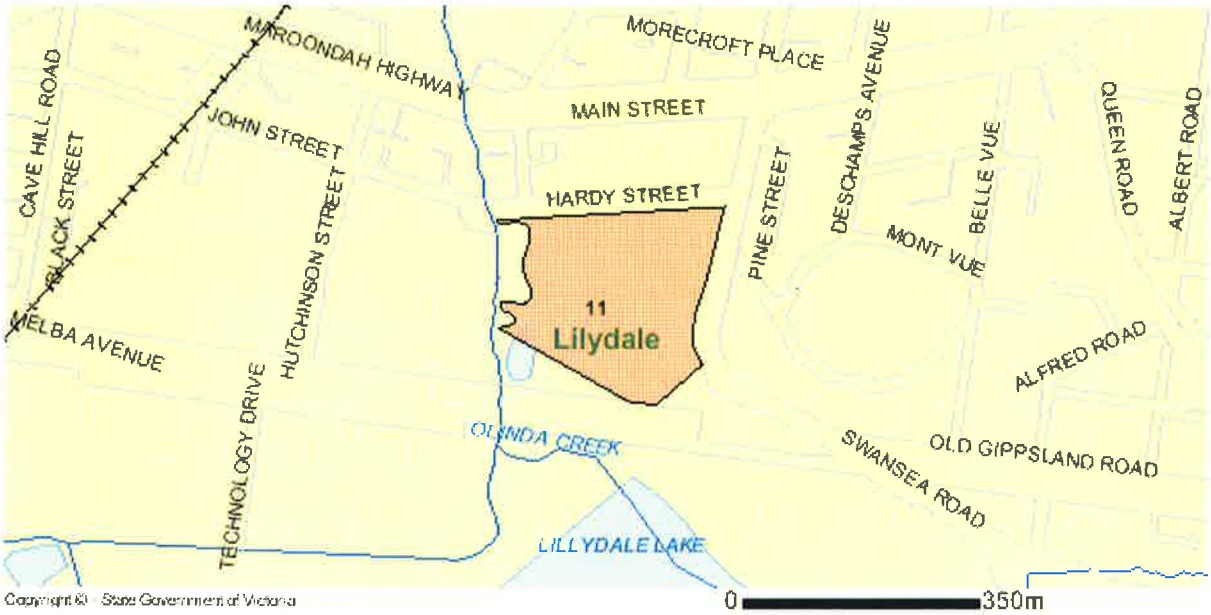
The data provides indicative information about the location and extent of areas of Aboriginal cultural heritage sensitivity and is provided to assist with the decisions about the potential need to prepare a Cultural Heritage Management Plan in relation to proposed activities on this property.

For further information about whether a Cultural Heritage Management Plan is required go to Aboriginal Heritage Planning Tool

To find out if your property has any recorded Aboriginal cultural heritage places, such as scarred trees, occupation sites or places of burial, you can request information from the Victorian Aboriginal Heritage Register.

Find out more about the Victorian Aboriginal Heritage Register

Area Map


MAROONDAH HIGHWAY
MORECROFT PLACE
DESCHAMPS AVENUE
CAVE HILL ROAD
BLACK STREET
JOHN STREET
MAIN STREET
HARDY STREET
PINE STREET
BELLE VUE
QUEEN ROAD
ALBERT ROAD
MONT VUE
HUTCHINSON STREET
11
Lilydale
MELBA AVENUE
ALFRED ROAD
TECHNOLOGY DRIVE
OLINDA CREEK
SWANSEA ROAD
OLD GIPPSLAND ROAD
LILLYDALE LAKE
0
350m

Planning Property Report

from www.dtpli.vic.gov.au/planning on 12 April 2016 01:28 PM

Address: 15 ANDERSON STREET LILYDALE 3140

Lot and Plan Number: Lot 1 PS546466

This property has a total of 4 parcels.

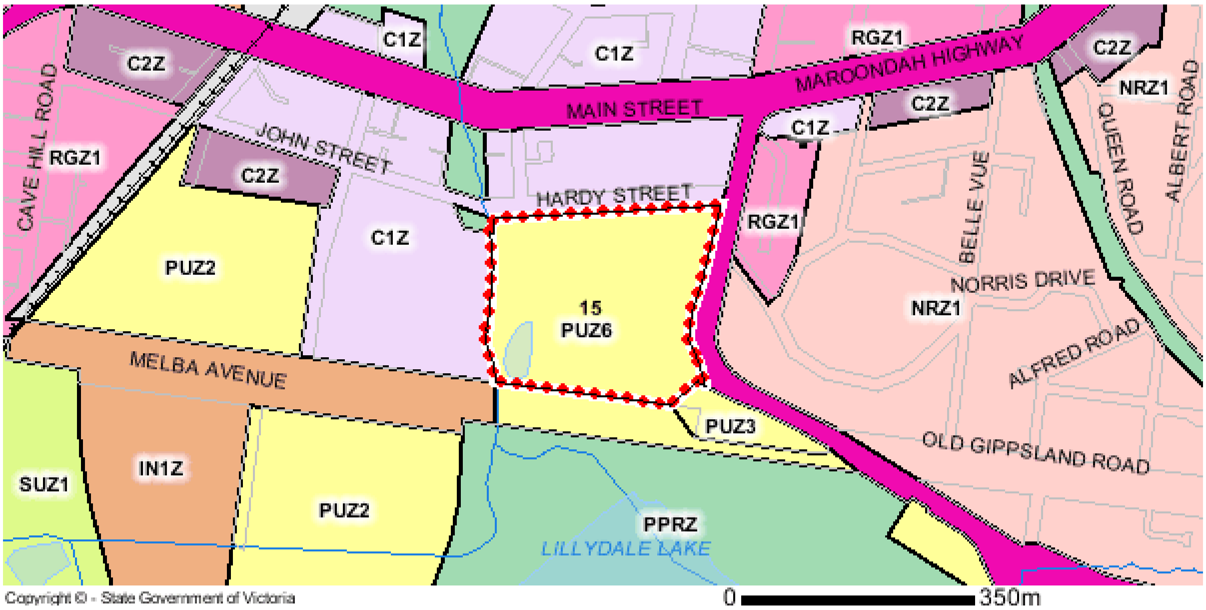
For full parcel details get the free Basic Property report at Property Reports

Local Government (Council): YARRA RANGES **Council Property Number:** 170523

Directory Reference: Melway 38 F5

Planning Zone

PUBLIC USE ZONE - LOCAL GOVERNMENT (PUZ6)



Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

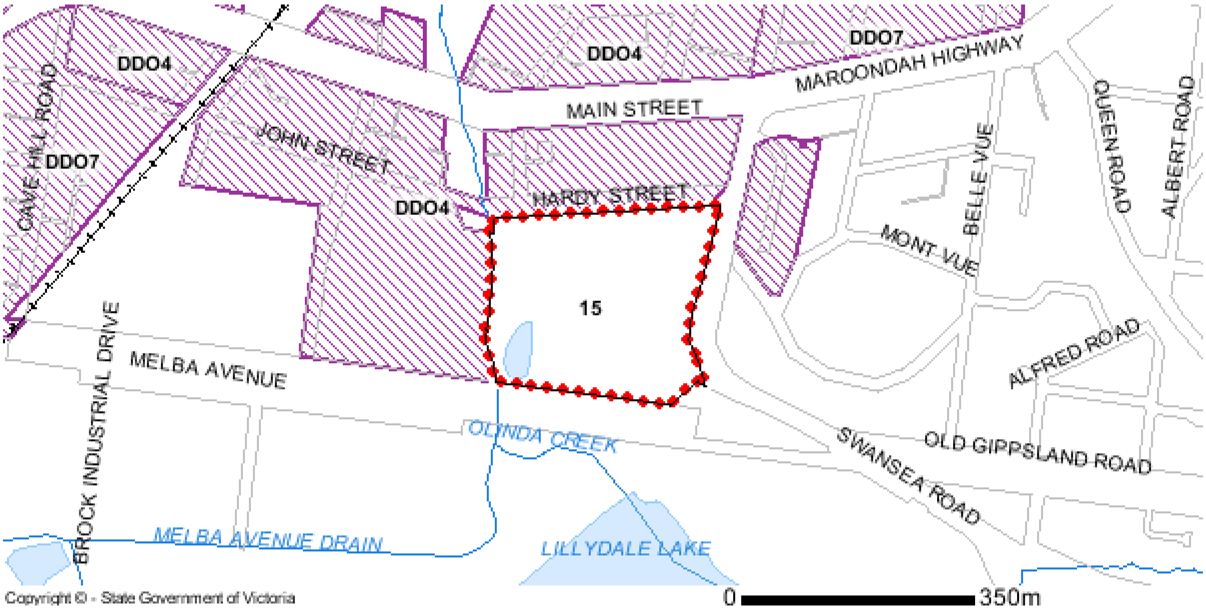
Zones Legend

ACZ - Activity Centre	IN1Z - Industrial 1	R1Z - General Residential
B1Z - Commercial 1	IN2Z - Industrial 2	R2Z - General Residential
B2Z - Commercial 1	IN3Z - Industrial 3	R3Z - General Residential
B3Z - Commercial 2	LDRZ - Low Density Residential	RAZ - Rural Activity
B4Z - Commercial 2	MUZ - Mixed Use	RCZ - Rural Conservation
B5Z - Commercial 1	NRZ - Neighbourhood Residential	RDZ1 - Road - Category 1
C1Z - Commercial 1	PCRZ - Public Conservation & Resource	RDZ2 - Road - Category 2
C2Z - Commercial 2	PDZ - Priority Development	RGZ - Residential Growth
CA - Commonwealth Land	PPRZ - Public Park & Recreation	RLZ - Rural Living
CCZ - Capital City	PUZ1 - Public Use - Service & Utility	RUZ - Rural
CDZ - Comprehensive Development	PUZ2 - Public Use - Education	SUZ - Special Use
DZ - Dockland	PUZ3 - Public Use - Health Community	TZ - Township
ERZ - Environmental Rural	PUZ4 - Public Use - Transport	UFZ - Urban Floodway
FZ - Farming	PUZ5 - Public Use - Cemetery/Crematorium	UGZ - Urban Growth
GRZ - General Residential	PUZ6 - Public Use - Local Government	
GWAZ - Green Wedge A	PUZ7 - Public Use - Other Public Use	Urban Growth Boundary
GWZ - Green Wedge	PZ - Port	

Planning Overlays

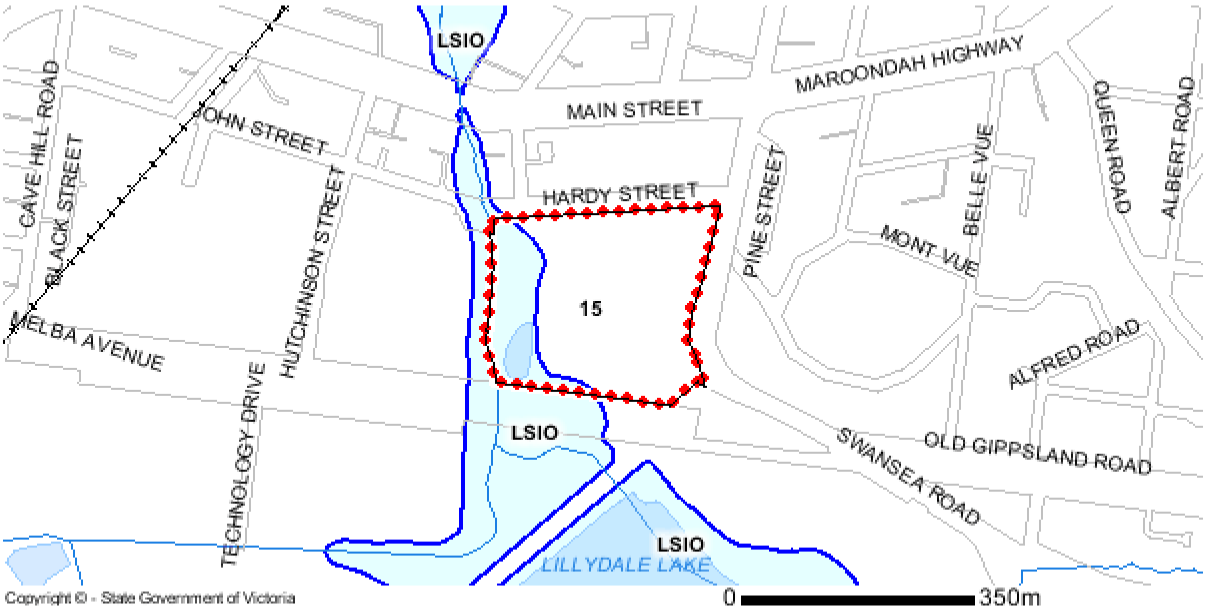
DESIGN AND DEVELOPMENT OVERLAY (DDO)

DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 4 (DDO4)



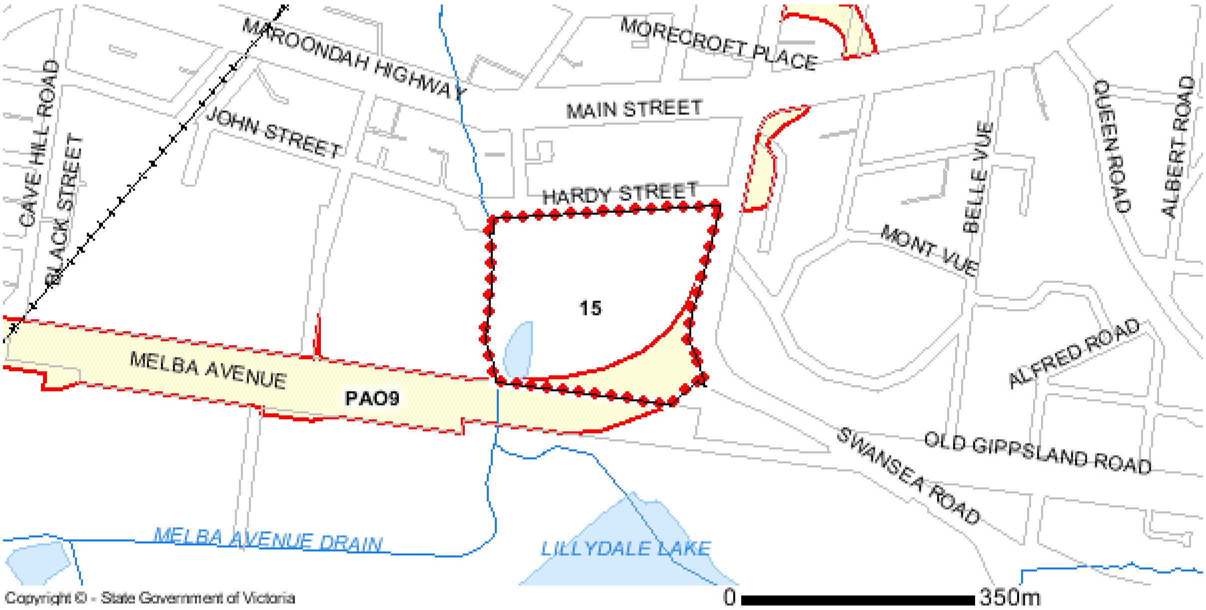
LAND SUBJECT TO INUNDATION OVERLAY (LSIO)

LAND SUBJECT TO INUNDATION OVERLAY SCHEDULE (LSIO)



Planning Overlays

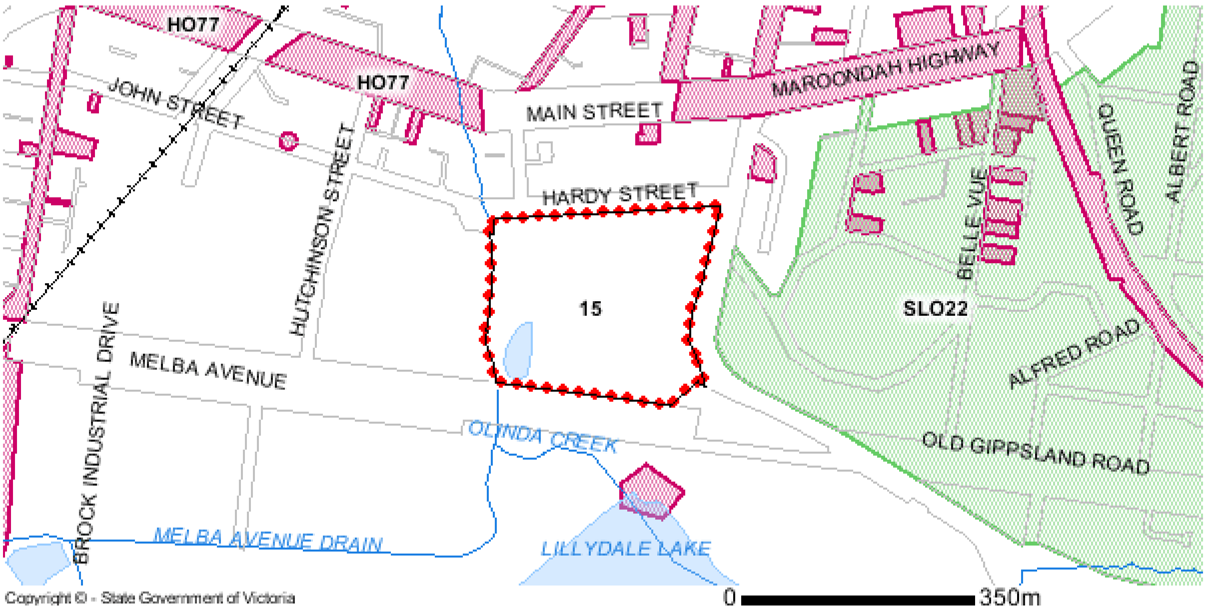
PUBLIC ACQUISITION OVERLAY (PAO)
PUBLIC ACQUISITION OVERLAY 9 SCHEDULE (PAO9)



OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

HERITAGE OVERLAY (HO)
SIGNIFICANT LANDSCAPE OVERLAY (SLO)



Planning Overlays Legend

Overlays Legend

- AEO - Airport Environs
- BMO - Bushfire Management (also WMO)
- CLPO - City Link Project
- DCPO - Development Contributions Plan
- DDO - Design & Development
- DDOPT - Design & Development Part
- DPO - Development Plan
- EAO - Environmental Audit
- EMO - Erosion Management
- ESO - Environmental Significance
- FO - Floodway
- HO - Heritage
- IPO - Incorporated Plan
- LSIO - Land Subject to Inundation
- MAEO1 - Melbourne Airport Environs 1
- MAEO2 - Melbourne Airport Environs 2
- NCO - Neighbourhood Character
- PO - Parking
- PAO - Public Acquisition
- RO - Restructure
- RCO - Road Closure
- SBO - Special Building
- SLO - Significant Landscape
- SMO - Salinity Management
- SRO - State Resource
- VPO - Vegetation Protection

Note: due to overlaps some colours on the maps may not match those in the legend.

Areas of Aboriginal Cultural Heritage Sensitivity

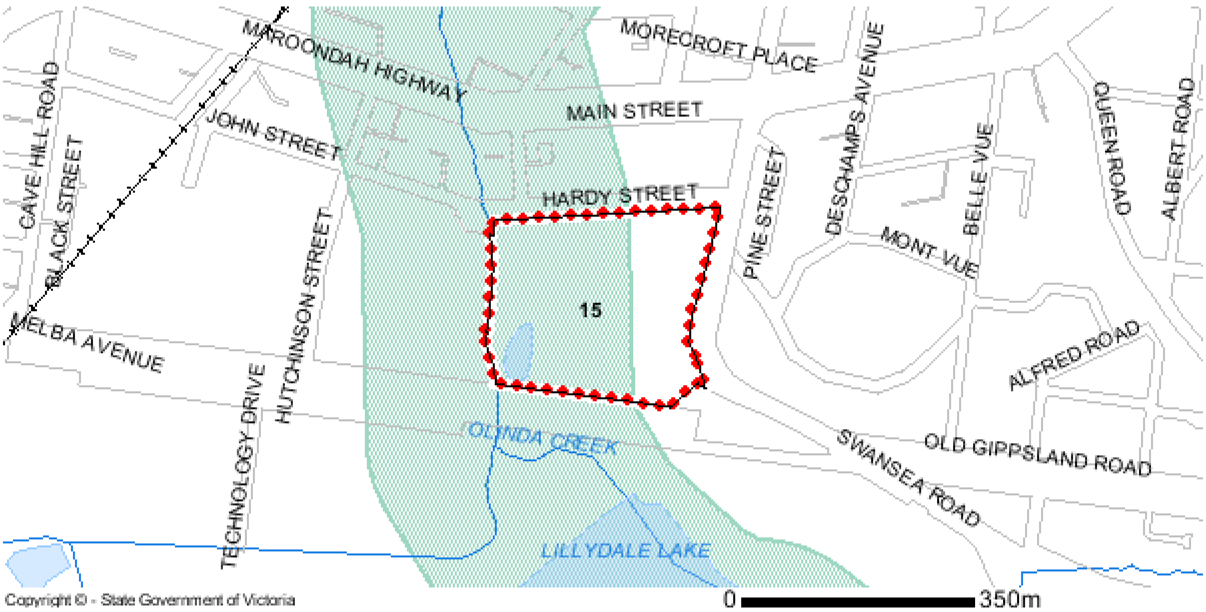
This property is within, or is affected by, one or more areas of cultural heritage sensitivity as described in the Aboriginal Heritage Regulations 2007.

The data provides indicative information about the location and extent of areas of Aboriginal cultural heritage sensitivity and is provided to assist with the decisions about the potential need to prepare a Cultural Heritage Management Plan in relation to proposed activities on this property.

For further information about whether a Cultural Heritage Management Plan is required go to Aboriginal Heritage Planning Tool

To find out if your property has any recorded Aboriginal cultural heritage places, such as scarred trees, occupation sites or places of burial, you can request information from the Victorian Aboriginal Heritage Register.

Find out more about the Victorian Aboriginal Heritage Register



Aboriginal Cultural Heritage Sensitivity

- Aboriginal Cultural Heritage Sensitivity
- Selected Land

Further Planning Information

Planning scheme data last updated on 7 April 2016.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State, local, particular and general provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting Planning Schemes Online

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the Planning & Environment Act 1987. It does not include information about exhibited planning scheme amendments, or zonings that may abut the land. To obtain a Planning Certificate go to Titles and Property Certificates

For details of surrounding properties, use this service to get the Reports for properties of interest

To view planning zones, overlay and heritage information in an interactive format visit Planning Maps Online

For other information about planning in Victoria visit www.delwp.vic.gov.au/planning

Appendix B: DELWP Groundwater Resource Report

Groundwater Resource Report

Groundwater catchment : East Port Phillip Bay **VICGRID94 Easting:** 2531159 **Northing:** 2415658

Depth to Water Table: 10 - 20m **Water Table Salinity (mg/L):** 1001-3500

Groundwater Layers (Aquifers and Aquitards)	*Depth Below Surface (m)*	*Groundwater Salinity (mg/L)*	*Groundwater Management Unit (GMU)*	*(GMU) Depth Below Surface (m)*	*PCV (ML/yr)*
BSE Mesozoic and Palaeozoic Bedrock (basement) sedimentary (fractured rock): Sandstone, siltstone, mudstone, shale. Igneous (fractured rock): includes volcanics, granites, granodiorites.	0 200	1001-3500	Unincorporated Area		

For further information about this report contact:
Department of Environment, Land, Water & Planning
Email: ground.water@delwp.vic.gov.au

For further information on groundwater licensing in this area contact:
Southern Rural Water Corporation
Phone: 1300 139 510
Email: srw@srw.com.au
Website: www.srw.com.au

Printed: 31 Mar 2016
Date Updated: 31 May 2014

Department of Environment, Land, Water & Planning

State Government Victoria

How to read this report

Introduction

Groundwater is part of the water cycle. When rain or snow falls on land, some of it evaporates, some flows to streams and rivers, and some seeps into the soil. Some of the water in the soil is used by plants but some continues to move down through the soil and rock until all the pores and cracks are full of water. This is known as the water table and this water is called groundwater.

Groundwater is a finite resource that, like surface water, is allocated under the *Water Act (1989)*. A Bore Construction Licence is required to drill for groundwater including for domestic and stock purposes. Taking and using groundwater for commercial or irrigation purposes requires an additional licence.

Purpose of this report

This report has been prepared to provide potential groundwater users with basic information about groundwater beneath their property. This includes the different geological layers, the depths of the layers and the salinity of groundwater in the layers. Information on the groundwater management units (GMU) and any associated caps on the volume that can be licensed (the PCV) are also provided.

Definitions and context

Term	Description
Groundwater Catchment	An identified area of the State within which groundwater resources are connected.
Easting / Northing	The VICGRID 94 coordinates of the spot that was selected on the interactive map.
Groundwater Salinity	Indicates the possible concentration of salts within the groundwater. The salt content indicates the possible uses of the water (see the Beneficial Use Table below). Fertilisers and other contaminants can also enter groundwater and affect its use. It is up to you to make sure that the groundwater you use is suitable for your purpose.
Aquifer	An aquifer is a layer of soil or rock which stores usable volumes of groundwater. Aquifers are generally limestones, gravels and sands, as well as some fractured rocks where the cracks in the rock are open and connected (some basalts, sandstones and limestones). How much water can be pumped from an aquifer depends on how much water is stored in pores and cracks, how well connected the pores and cracks are, and how thick the layer is. It is more likely that volumes of water for irrigation and urban water supply will come from gravels, sands, limestones and basalts that are at least 30 metres thick. Low volumes of water for domestic and stock use are likely from any aquifer greater than 10 metres thick. The advice above is a guide only, as the amount of water available can be highly variable. Actual pumping volumes can only be determined from drilling, appropriate construction and testing of a bore.
Aquitard	An aquitard is a layer of rock or soil that does not allow water to move through it easily, limiting its capacity to supply water. Aquitards are generally silts, clays and fractured rocks (where there are few cracks in the rock or the cracks are poorly connected).
Groundwater Management Unit (GMU)	A collective term for groundwater management areas (GMAs) and water supply protection areas (WSPAs). GMAs and WSPAs are defined areas and depths below the surface where rules for groundwater use may apply. WSPAs often have caps on groundwater use and plans describing how the resource is managed. GMAs usually have caps on groundwater use and may have local plans and rules. All other areas are managed directly through the Water Act (1989). Always check with your local Rural Water Corporation to be sure that the information on the GMU is correct for your specific location.
Permissible Consumptive Volume (PCV)	A cap that is set under the Water Act (1989) declaring the total volume of groundwater that may be taken from the area. Once the PCV is reached, no additional extraction can be licensed for use within the area unless traded from another groundwater licence holder.
Depth to Water Table	This is an indication of the depth at which groundwater might first be encountered when drilling a bore. The depth can vary from year to year, and from place to place and may vary significantly from that indicated in this report.

Beneficial use table

Salinity Range (mg/L TDS)	Beneficial Use as described by State Environment Protection Policy (Groundwaters of Victoria) s160							
	Potable Water - Preferred	Potable Water - Acceptable	Potable Mineral Water	Irrigation	Stock Water	Industry	Ecosystem Protection	Buildings and Structures
<500	✓	✓	✓	✓	✓	✓	✓	✓
501-1000		✓	✓	✓	✓	✓	✓	✓
1001-3500			✓	✓	✓	✓	✓	✓
3501-13000					✓	✓	✓	✓
13001+						✓	✓	✓

Department of Environment, Land, Water & Planning

State Government Victoria

Appendix C: EPA Victoria Priority Sites Register Extract

Extract of EPA Priority Site Register

EPA VICTORIA

PROPERTY INQUIRY DETAILS:

STREET ADDRESS: 15 ANDERSON STREET
SUBURB: LILYDALE
MUNICIPALITY: SHIRE OF YARRA RANGES
MAP REFERENCES: Melways 40th Edition, Street Directory, Map 38 Reference F6
Melways 40th Edition, Street Directory, Map 38 Reference F5
Melways 40th Edition, Street Directory, Map 38 Reference E6
Melways 40th Edition, Street Directory, Map 38 Reference E5

DATE OF SEARCH: 4th April 2016

PRIORITY SITES REGISTER REPORT:

A search of the Priority Sites Register for the above map references, corresponding to the address given above, has indicated that this site is not listed on, and is not in the vicinity of a site listed on the Priority Sites Register at the above date.

IMPORTANT INFORMATION ABOUT THE PRIORITY SITES REGISTER:

You should be aware that the Priority Sites Register lists only those sites for which EPA has requirements for active management of land and groundwater contamination. Appropriate clean up and management of these sites is an EPA priority, and as such, EPA has issued either a:

Clean Up Notice pursuant to section 62A, or a
Pollution Abatement Notice pursuant to section 31A or 31B

of the Environment Protection Act 1970 on the occupier of the site to require active management of these sites.

The Priority Sites Register does not list all sites known to be contaminated in Victoria. A site should not be presumed to be free of contamination just because it does not appear on the Priority Sites Register.

Persons intending to enter into property transactions should be aware that many properties may have been contaminated by past land uses and EPA may not be aware of the presence of contamination. EPA has published information advising of potential contaminating land uses. Municipal planning authorities hold information about previous land uses, and it is advisable that such sources of information also be consulted.

For sites listed on the Priority Sites Register, a copy of the relevant Notice, detailing the reasons for issue of the Notice, and management requirements, is available on request from EPA for $8 per Notice.

For more information relating to the Priority Sites Register, refer to EPA contaminated site information bulletin: Priority Sites Register & Contaminated Land Audit Site Listing (EPA Publication 735). For a copy of this publication, copies of relevant Notices, or for more information relating to sites listed on the Priority Sites Register, please contact EPA as given below:

EPA Information Centre
Herald & Weekly Times Tower
40 City Road, Southbank 3006
Tel: (03)9695 2700 Fax:(03)9695 2710

[Extract of Priority Sites Register] # 21726910 - 21726910092055 'Y0003/19746'

Extract of EPA Priority Site Register

Extract of EPA Priority Site Register

EPA VICTORIA

PROPERTY INQUIRY DETAILS:

STREET ADDRESS: 13 HARDY STREET
SUBURB: LILYDALE
MUNICIPALITY: SHIRE OF YARRA RANGES
MAP REFERENCES: Melways 40th Edition, Street Directory, Map 38 Reference F6
Melways 40th Edition, Street Directory, Map 38 Reference F5
Melways 40th Edition, Street Directory, Map 38 Reference E6
Melways 40th Edition, Street Directory, Map 38 Reference E5

DATE OF SEARCH: 4th April 2016

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EPA Information Centre
Herald & Weekly Times Tower
40 City Road, Southbank 3006
Tel: (03)9695 2700 Fax:(03)9695 2710

[Extract of Priority Sites Register] # 21728671 - 21728671105139 'Y0003/19746'

Extract of EPA Priority Site Register

Appendix D: Previous Environmental Report

Connolly Environmental
142 Dynon Road
West Melbourne
Vic 3003 Australia
Telephone +61 3 9372 5688
Facsimile +61 3 9372 5699
www.connolly.com.au

Report to Peddle Thorp Architects

Soil investigation

Yarra Ranges Shire Offices
15 Anderson Street
Lilydale VIC

December 2011

Executive summary

Introduction

Peddle Thorp Architects Pty Ltd engaged Connolly Environmental to conduct a soil investigation at 15 Anderson Street, Lilydale VIC ("the site"). The site was the location of the Yarra Ranges Shire Offices which are proposed to be redeveloped. The aim of the soil investigation was to assess the contamination status of the soil within the proposed development area for offsite disposal purposes.

Geotechnical investigations were also conducted by Hardrock geotechnical consultants as part of these works. The results of the geotechnical assessment were presented within a separate report.

Limitations

Conclusions in this report were based on site observations, testing and other information obtained by Connolly Environmental, and on the assumption that these data were representative and reliable. These conclusions must be read in conjunction with the assumptions and uncertainties included in the report. If site conditions or information different to that set out in the report are identified or appear to be present, please advise us promptly. We will re-evaluate our conclusions where necessary.

This report has been prepared for the exclusive use of the client. We have used a degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession, practicing in the same or similar localities. No other warranty, expressed or implied, is made or intended.

This report is issued on the condition that it will not be altered, amended or abbreviated, issued in part or issued incomplete without our prior approval. We accept no responsibility for any loss, damage or consequence that may arise from breaches of this condition.

Scope of work

The scope of work comprised:

- Identification of safe boring locations with an underground service location specialist.
- Installation of ten soil bores to a maximum depth of 1.5 m.
- Engage geotechnical engineering contractor.
- Collection of soil samples at a minimum of 0.2 m, 0.5 m, 1.0 m and at the base of each bore.
- A soil vapor survey using a portable photoionisation detector (PID) at each sample location.
- Laboratory analysis of selected soil samples for a range of potential contaminants of concern.
- Preparation of this report.

Soil bore locations are shown on Figure 1, Appendix 1.

Conclusions

From the current results obtained and based upon visual inspection at the time of sampling on site, Connolly Environmental concluded:

- Elevated concentrations of total PAH in the range for Category C contaminated soils were identified at bore B1 at 0.2 m depth. The concentrations were indicative of asphalt fragments within the sample, and were not representative of the contamination status of the crushed rock layer. The concentration was considered to be an erroneous result.
- Elevated concentrations of nickel were considered to be associated with the presence of basaltic gravels within the soil which is in the fill layer contains naturally, associated with crushed rock.
- Natural soils on site contain naturally elevated levels of fluoride.
- Fill material on site is classified as **EPA Fill material with naturally elevated nickel** for offsite disposal purposes.
- Natural soils were classified as **EPA Fill material with naturally elevated fluoride** for offsite disposal purposes.
- Given the elevated naturally occurring concentrations of fluoride and nickel, this soil should not be used for a sensitive use. It can be disposed to landfill or used within a non sensitive use development (such as commercial/industrial). The receiver of the soils must be notified of the naturally elevated fluoride and nickel and provided with the results.

Offsite disposal and transport of soils excavated from the site must be in accordance with EPA requirements. Please note that some landfill may require further soil sampling and analysis prior to acceptance of material for offsite disposal at their own discretion.

Contents

Appendices

Current document distribution

Distribution		Copy No this copy	1
Copy	**Company**	**Name/Location**	
1	Peddle Thorp Architects Pty Ltd	James Hampton (electronic copy)	
0	Connolly Environmental	Job file (11147b) (electronic copy)	

Document history

Revision	Date	Description
0	23 December 2011	Report

Current document authorisation

Report prepared by	Signature
James Allison	James Allison

Reviewed and authorised by	Signature
Paul Gruber	

1 Introduction

Peddle Thorp Architects Pty Ltd engaged Connolly Environmental to conduct a soil investigation at 15 Anderson Street, Lilydale VIC ("the site"). The site was the location of the Yarra Ranges Shire Offices which are proposed to be redeveloped. The aim of the soil investigation was to assess the contamination status of the soil within the proposed development area for offsite disposal purposes.

Geotechnical investigations were also conducted by Hardrock geotechnical consultants as part of these works. The results of the geotechnical assessment were presented within a separate report.

1.1 Limitations

Conclusions in this report were based on site observations, testing and other information obtained by Connolly Environmental, and on the assumption that these data were representative and reliable. These conclusions must be read in conjunction with the assumptions and uncertainties included in the report. If site conditions or information different to that set out in the report are identified or appear to be present, please advise us promptly. We will re-evaluate our conclusions where necessary.

This report has been prepared for the exclusive use of the client. We have used a degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession, practicing in the same or similar localities. No other warranty, expressed or implied, is made or intended.

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- A soil vapor survey using a portable photoionisation detector (PID) at each sample location.
- Laboratory analysis of selected soil samples for a range of potential contaminants of concern.
- Preparation of this report.

Soil bore locations are shown on Figure 1, Appendix 1.

3 Site setting

The site was occupied by Yarra Ranges Shire Offices. The improvements on the site included two multi-level buildings located in the centre of the site. Surrounding the buildings were car parking, access roads as well as grassed and garden areas. The site sloped downwards to the west.

The site layout is shown in Figure 1, Appendix 1.

4 Proposed development

The proposed development includes a new building to north of the existing main building with minor building extension works to the west and north east.

Connolly has classified up to 2500 m^3 of fill material and 2500 m^3 of natural material for offsite disposal purposes.

5 Potential contaminants

Based on current site uses and likely historical agricultural uses, the potential contaminants of concern were assessed to be:

- Organochlorine pesticides (OCP).
- Metals.
- Petroleum hydrocarbons (TPH).
- Polyaromatic hydrocarbons (PAH).

6 Assessment Criteria

The procedures for classifying waste are detailed in the EPA Victoria publication IWRG 621, Soil Hazard Categorisation and Management (EPA Vic, 2009).

Waste categorisation can be ascertained by comparing contaminant concentrations against table 2 thresholds. Soil concentrations exceeding Fill Material upper limits (TC0 or ASLP1) are classed as Prescribed Industrial Waste (TC0 or ASLP1), and can be categorised as:

- Category C contaminated soil
- Category B contaminated soil
- Category A contaminated soil

7 Soil investigation

The methods and procedures for all fieldwork, decontamination procedures and sample handling were consistent with the Connolly Environmental field protocols.

All laboratory analyses were conducted by NATA endorsed laboratories using NATA approved analytical methods. The primary laboratory for the project was Australian Laboratory Services (ALS). Quality control analyses were conducted by SGS Environmental (SGS).

7.1 Sample locations

Soil samples were collected from ten bore locations on site. Bore locations are shown in Figure 1, Appendix 1.

Soil samples showing the highest potential for contamination were selected for analysis based on soil vapor results, odor and visual observations. Selected samples were analysed for EPA screen, OCP, screen metals, TPH and PAH. The tabulated analysis results are provided in Table 1, **Error! Reference source not found.**.

7.2 Field observations

At sample locations B1, B2 and B10 there was an asphalt surface underlain by crushed rock and silty clay fill to maximum 0.5 m depth. Other surface layers were grassed.

Fill across the site was silty clay and clayey silt, brown with minor sand and crushed rock. This layer may have been a disturbed natural material from cut and fill activities from previous landscaping works on site. Maximum depth of fill encountered on site was 0.9 m, but was variable.

Natural material on site consisted of silty clay and clayey silt, light brown and greyish brown with yellow mottling. Bores B7 and B10 were terminated on weathered siltstone at 1.1 m depth.

Dry to moist conditions were encountered in all bore holes except B1 at 0.5 m depth where localised perched water was encountered above the natural silty clay layer.

The soil vapor readings from the soil boring and sampling were all considered low as is summarised in table 7.1 below.

Table 7.1 Soil vapor survey results.

Bore no.	PID reading (ppm)			
	0 - 0.2 m	0.21 - 0.5 m	0.51 - 1.0 m	1.01 - 1.5m
B1	-	-	13.4-28.8	17.8
B2	22.4	17.0	8.6-12.5	6.2
B3	8.1	7.6	1.8	3.7
B4	8.6	10.6	9.8	5.9
B5	6.2	3.7	4.2	4.5
B6	3.5	4.0	5.1	2.4
B7	8.6	4.5	4.0	-
B8	2.2	1.6	0.8	1.0
B9	0.6	0.4	0.5	0.4
B10	0.9	-	0.5-0.7	

7.3 Laboratory analysis results

Tabulated soil laboratory analysis results are provided in Table 1 Appendix 2. The NATA-endorsed laboratory reports are included in Appendix 3.

7.3.1 Fill

Laboratory analysis results showed:

- Elevated concentration of total PAH at sample B1 located in the car park at 0.2 m depth in the range for EPA Category C contaminated soil.
- Elevated concentrations of nickel at two sample locations (B3 and B9) in the range for EPA Category C contaminated soil.
- Non detectable to low concentrations for all other analytes.

Laboratory leachability analysis results showed non detectable to low leachable concentrations for lead and BaP below EPA Fill upper limits.

7.3.2 Natural

Laboratory analysis results showed:

- One elevated concentration of fluoride at sample location B4/1.4 (960 mg/kg) in the range for EPA Category C material for offsite disposal purposes.
- Non detectable to low concentrations for all other analytes below EPA Fill material upper limits.

Further analysis was conducted on nine natural samples to assess fluoride levels in natural soils across the site. Laboratory analysis showed:

- Four elevated concentrations of fluoride in the range for EPA Category C material in bores B2, B3, B7 and B10.

8 Discussion

Elevated concentrations of nickel (100 mg/kg) within samples collected from bores B3 and B9 were identified. The field observations indicated basaltic gravels were present within the samples which commonly show naturally elevated levels of nickel. As such the concentrations observed were considered to be attributed to naturally elevated levels of the source material.

Elevated concentrations of fluoride (ranging between 300 and 960 mg/kg) were observed in natural soils. Analysis of natural soils for fluoride across the site showed that levels were consistently elevated which enabled us to conclude the levels were naturally elevated.

Elevated concentrations of total PAH (30mg/kg) were observed in bore B1. The sample was collected directly beneath asphalt which was drilled using solid augers. The PAH congener profile appeared consistent with that of asphalt and it was likely that the drilling process could have resulted in small fragments of asphalt to be collected within the soil sample jar. We considered these elevated concentrations within the crushed rock layer beneath the car park was due to contamination by asphalt, and was not representative of the contamination status of the crushed rock layer. The PAH concentrations in bore B1 at 0.2 m depth were considered to be an erroneous result and excluded from consideration of the contamination status of fill at the site.

9 Conclusions

From the current results obtained and based upon visual inspection at the time of sampling on site, Connolly Environmental concluded:

- Elevated concentrations of total PAH in the range for Category C contaminated soils were identified at bore B1 at 0.2 m depth. The concentrations were indicative of asphalt fragments within the sample, and were not representative of the contamination status of the crushed rock layer. The concentration was considered to be an erroneous result.
- Elevated concentrations of nickel were considered to be associated with the presence of basaltic gravels within the soil which is in the fill layer contains naturally, associated with crushed rock.
- Natural soils on site contain naturally elevated levels of fluoride.
- Fill material on site is classified as **EPA Fill material with naturally elevated nickel** for offsite disposal purposes.
- Natural soils were classified as **EPA Fill material with naturally elevated fluoride** for offsite disposal purposes.

- Given the elevated naturally occurring concentrations of fluoride and nickel, this soil should not be used for a sensitive use. It can be disposed to landfill or used within a non sensitive use development (such as commercial/industrial). The receiver of the soils must be notified of the naturally elevated fluoride and nickel and provided with the results.
- Offsite disposal and transport of soils excavated from the site must be in accordance with EPA requirements. Please note that some landfill may require further soil sampling and analysis prior to acceptance of material for offsite disposal at their own discretion.

10 References

ANZECC (1992a) Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites Australian and New Zealand Environment and Conservation Council, National Health and Medical Research Council. January 1992.

ASRIS (2006) Australian Soil Resource Information System, CSRIO, 2006 (Access: Oct. 2009)

EPA Victoria (2009) Industrial Waste Resource Guideline Publication 621: Soil Hazard Categorisation and Management, EPA 2009.

Standards Australia (2005) Australian Standard Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds (AS 4482.1) Standards Australia, 2005.

Standards Australia (1999) Australian Standard Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances Australian Standard 4482.2.

Appendix 1 Figures

Legend:
B9 Soil bore location

Connolly Environmental
www.connolly.com.au

142 Dynon Road
West Melbourne Vic 3003
Australia
ACN 151 466 705
Telephone +61 3 9372 5688
Facsimile + 61 3 9372 5699
www.connolly.com.au

Job Number:	Figure Number:	Revision:	Date:
11147b	1	-	23/12/2011
Drawn By:	Checked By:	Scale:	
PC	JA	0 — 10m	

Client: Peddle Thorpe Architects
Location: Yarra Council, Anderson St, Lilydale Vic
Subject: Soil bore locations

G:\01.Jobs\2011\11147\05.Figures\Autocad\SoilBoreLocation.dwg

Appendix 2 Tabulated laboratory data results

Table 1: **Soil results (mg/kg)**
Job No: **11147b**
Client: **Peddle Thorp Architects Pty Ltd**
Site: **Lilydale**

					CHC																			HVOL											
Connolly job no.	Connolly sample no.	Lab report no.	Date sampled	Matrix	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3,5-Trichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	2-chloronaphthalene	Benzal Chloride	Benzotrichloride	Benzyl chloride	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Pentachlorobenzene	CHC (IWRG-621)	Other CHC (IWRG-621)	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dibromoethane	1,2-dichloroethane	1,2-Dichloroethene [cis]
Category C upper limits					-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-
Catergory B upper limits					-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-
Fill Material upper limits					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Fill (crushed rock)																																			
11147b	B1/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B2/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B10/0.2	11-51490	28/11/2011	Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fill																																			
11147b	B2/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B4/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B5/0.2	11-51490	28/11/2011	Fill	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
11147b	B6/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B509/0.2 (QAQC)*	*11-51490*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B609/0.2 (QAQC)*	*ME200543-1*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.5	11-52461	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural																																			
11147b	B1/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B1/1.5	11-53065	28/11/2011	Natural																															
11147b	B2/1.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/1.5	11-53065	28/11/2011	Natural																															
11147b	B4/1.4	11-51490	28/11/2011	Natural	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
11147b	B5/1.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/1.5	11-53065	28/11/2011	Natural																															
11147b	B7/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/1.5	11-53065	28/11/2011	Natural																															
11147b	B9/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/1.5	11-53065	28/11/2011	Natural																															
11147b	B10/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Crushed rock sample

Table 1: **Soil results (mg/kg)**
Job No: **11147b**
Client: **Peddle Thorp Architects Pty Ltd**
Site: **Lilydale**

																												Inorganics		MAH							
Connolly job no.	Connolly sample no.	Lab report no.	Date sampled	Matrix	1,2-Dichloroethene [trans]	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroform	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Trichloroethene	Tetrachloroethene	trans-1,3-dichloropropene	Trichlorofluoromethane	Vinyl chloride	Cyanide Total	Fluoride	1,2,4-trimethylbenzene	Benzene	Ethylbenzene	Cumene	Styrene	Toluene	Xylene Total	Total MAH (IWRG-621)
Category C upper limits					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	2500	10000	-	4	-	-	-	-	-	70
Catergory B upper limits					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	10000	40000	-	16	-	-	-	-	-	240
Fill Material upper limits					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	450	-	1	-	-	-	-	-	7
Fill (crushed rock)																																				
11147b	B1/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B2/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B10/0.2	11-51490	28/11/2011	Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fill																																				
11147b	B2/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B4/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B5/0.2	11-51490	28/11/2011	Fill	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<2	<1	<5	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND
11147b	B6/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B509/0.2 (QAQC)*	*11-51490*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B609/0.2 (QAQC)*	*ME200543-1*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.5	11-52461	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural																																				
11147b	B1/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B1/1.5	11-53065	28/11/2011	Natural																-	-	-	-	-	-	-	-	440	-	-	-	-	-	-	-	-
11147b	B2/1.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	460	-	-	-	-	-	-	-	-
11147b	B3/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/1.5	11-53065	28/11/2011	Natural																-	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-	-
11147b	B4/1.4	11-51490	28/11/2011	Natural	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<2	<1	<5	960	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND
11147b	B5/1.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-	-
11147b	B6/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/1.5	11-53065	28/11/2011	Natural																-	-	-	-	-	-	-	-	350	-	-	-	-	-	-	-	-
11147b	B7/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	960	-	-	-	-	-	-	-	-
11147b	B8/0.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/1.5	11-53065	28/11/2011	Natural																-	-	-	-	-	-	-	-	400	-	-	-	-	-	-	-	-
11147b	B9/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/1.5	11-53065	28/11/2011	Natural																-	-	-	-	-	-	-	-	380	-	-	-	-	-	-	-	-
11147b	B10/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	800	-	-	-	-	-	-	-	-

* Crushed rock sample

Table 1: **Soil results (mg/kg)**
Job No: **11147b**
Client: **Peddle Thorp Architects Pty Ltd**
Site: **Lilydale**

					Metals													**OCP**																	
Connolly job no.	**Connolly sample no.**	**Lab report no.**	**Date sampled**	**Matrix**	**Arsenic**	**Cadmium**	**Chromium (hexavalent)**	**Chromium (III+VI)**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Tin**	**Zinc**	**4,4-DDE**	**a-BHC**	**Aldrin**	**Aldrin + Dieldrin**	**b-BHC**	**Chlordane (cis)**	**Chlordane (trans)**	**d-BHC**	**DDD**	**DDT**	**DDT+DDE+DDD**	**Dieldrin**	**Endosulfan I**	**Endosulfan II**	**Endosulfan sulphate**	**Endrin**	**Endrin aldehyde**
Category C upper limits					500	100	500	-	5000	1500	75	1000	3000	50	180	500	35000	-	-	-	1.2	-	-	-	-	-	-	50	-	-	-	-	-	-
Catergory B upper limits					2000	400	2000	-	20000	6000	300	4000	12000	200	720	-	140000	-	-	-	4.8	-	-	-	-	-	-	50	-	-	-	-	-	-
Fill Material upper limits					20	3	1	-	100	300	1	40	60	10	10	50	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fill (crushed rock)																																		
11147b	B1/0.2	11-51490	28/11/2011	Fill *	8	<0.2	-	24	6	9	<0.05	-	12	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B2/0.2	11-51490	28/11/2011	Fill *	<5	0.4	-	5	<5	8	<0.05	-	<5	-	-	-	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B10/0.2	11-51490	28/11/2011	Fill*	<5	0.3	-	21	15	39	<0.05	-	21	-	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fill																																		
11147b	B2/0.5	11-51490	28/11/2011	Fill	<5	<0.2	-	8	<5	15	<0.05	-	<5	-	-	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/0.2	11-51490	28/11/2011	Fill	<5	<0.2	-	38	49	6	<0.05	-	100	-	-	-	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B4/0.2	11-51490	28/11/2011	Fill	<5	<0.2	-	8	<5	22	0.07	-	7	-	-	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B5/0.2	11-51490	28/11/2011	Fill	<5	<0.2	<1	-	6	29	0.06	<5	<5	<3	<5	<5	22	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B6/0.2	11-51490	28/11/2011	Fill	<5	<0.2	-	6	<5	10	<0.05	-	<5	-	-	-	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/0.5	11-51490	28/11/2011	Fill	<5	<0.2	-	9	<5	11	<0.05	-	<5	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/0.5	11-51490	28/11/2011	Fill	<5	<0.2	-	37	30	18	0.05	-	56	-	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.2	11-51490	28/11/2011	Fill	<5	<0.2	-	8	5	33	<0.05	-	<5	-	-	-	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.2	11-51490	28/11/2011	Fill	<5	<0.2	-	15	10	20	<0.05	-	10	-	-	-	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B509/0.2 (QAQC)*	*11-51490*	*28/11/2011*	*Fill*	*6*	*2.7*	-	*25*	*14*	*19*	*0.08*	-	*16*	-	-	-	*36*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B609/0.2 (QAQC)*	*ME200543-1*	*28/11/2011*	*Fill*	*<3*	*<0.3*	-	*14*	*10*	*15*	*<0.05*	-	*14*	-	-	-	*28*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.5	11-52461	28/11/2011	Fill	<5	<0.2	-	52	56	<5	<0.05	-	100	-	-	-	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural																																		
11147b	B1/1.0	11-51490	28/11/2011	Natural	<5	<0.2	-	15	<5	12	0.05	-	<5	-	-	-	5	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B1/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B2/1.5	11-51490	28/11/2011	Natural	5	<0.2	-	9	<5	15	0.05	-	<5	-	-	-	13	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B3/1.0	11-51490	28/11/2011	Natural	<5	<0.2	-	9	<5	12	<0.05	-	<5	-	-	-	<5	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B3/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B4/1.4	11-51490	28/11/2011	Natural	5	<0.2	<1	-	<5	20	0.05	<5	<5	10	<5	<5	11	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B5/1.5	11-51490	28/11/2011	Natural	<5	<0.2	-	19	<5	18	<0.05	-	<5	-	-	-	<5	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B6/1.0	11-51490	28/11/2011	Natural	<5	<0.2	-	11	<5	12	<0.05	-	<5	-	-	-	<5	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B6/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/1.0	11-51490	28/11/2011	Natural	<5	<0.2	-	<5	<5	10	<0.05	-	<5	-	-	-	80	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B8/0.5	11-51490	28/11/2011	Natural	<5	<0.2	-	8	<5	14	<0.05	-	<5	-	-	-	<5	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B8/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/1.0	11-51490	28/11/2011	Natural	<5	<0.2	-	13	<5	11	<0.05	-	<5	-	-	-	<5	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11147b	B9/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B10/1.0	11-51490	28/11/2011	Natural	<5	0.5	-	10	<5	18	0.12	-	10	-	-	-	47	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

* Crushed rock sample

Table 1: **Soil results (mg/kg)**
Job No: **11147b**
Client: **Peddle Thorp Architects Pty Ltd**
Site: **Lilydale**

													PAH																	PCB					
Connolly job no.	Connolly sample no.	Lab report no.	Date sampled	Matrix	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Other OCP (IWRG-621)	Total OCP (IWRG-621)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Total PAH	Phenanthrene	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254
Category C upper limits					-	-	1.2	-	-	-	10	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-
Catergory B upper limits					-	-	4.8	-	-	-	50	-	-	-	-	-	20	-	-	-	-	-	-	-	-	-	400	-	-	-	-	-	-	-	-
Fill Material upper limits					-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-	-	-
Fill (crushed rock)																																			
11147b	B1/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	0.7	1.6	2	1.3	0.8	0.7	0.4	0.7	0.9	0.2	3.9	2.1	0.4	5.9	30	5.7	2.7	-	-	-	-	-	-
11147b	B2/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	-	-	-	-	-	-
11147b	B10/0.2	11-51490	28/11/2011	Fill*	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	<0.1	-	-	-	-	-	-
Fill																																			
11147b	B2/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	-	-	-	-	-	-
11147b	B3/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	-	-	-	-	-	-
11147b	B4/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B5/0.2	11-51490	28/11/2011	Fill	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
11147b	B6/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	-	-	-	-	-	-
11147b	*B509/0.2 (QAQC)*	*11-51490*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	*<0.1*	*<0.1*	*<0.1*	*0.1*	*0.1*	*<0.1*	*<0.1*	*<0.1*	*0.1*	*<0.1*	*0.2*	*<0.1*	*<0.1*	*<0.1*	*0.7*	*<0.1*	*0.2*	-	-	-	-	-	-
11147b	*B609/0.2 (QAQC)*	*ME200543-1*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*ND*	*<0.1*	*<0.1*	-	-	-	-	-	-
11147b	B9/0.5	11-52461	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural																																			
11147b	B1/1.0	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.1	<0.1	0.2	1.4	0.4	0.2	-	-	-	-	-	-
11147b	B1/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B2/1.5	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	-	-	-	-	-	-
11147b	B3/1.0	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B4/1.4	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
11147b	B5/1.5	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/1.0	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/1.0	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.5	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/1.0	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B10/1.0	11-51490	28/11/2011	Natural	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	-	-	-	-	-	-

* Crushed rock sample

Table 1: **Soil results (mg/kg)**
Job No: **11147b**
Client: **Peddle Thorp Architects Pty Ltd**
Site: **Lilydale**

							Phenols (Halogenated)												Phenols (Non-Halogenated)												TPH				
Connolly job no.	Connolly sample no.	Lab report no.	Date sampled	Matrix	Arochlor 1260	PCBs (Sum of total)	2,3,4,5-tetrachlorophenol	2,3,4,6-tetrachlorophenol	2,3,5,6-Tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	4-chloro-3-methylphenol	Pentachlorophenol	Phenols (Total Halogenated)	Halogenated Phenols (IWRG-621)	2,4-dimethylphenol	2,4-dinitrophenol	2-nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-nitrophenol	Cresol Total	Dinoseb	Phenol	Phenols (Total Non Halogenated)	Non halogenated Phenols (IWRG-621)	TPH C6 - C9	TPH C10 - C14	TPH C15 - C28	TPH C29-C36	TPH+C10 - C36 (Sum of total)
Category C upper limits					-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	560	650	-	-	-	10000
Catergory B upper limits					-	50	-	-	-	-	-	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	2200	2600	-	-	-	40000
Fill Material upper limits					-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	60	100	-	-	-	1000
Fill (crushed rock)																																		
11147b	B1/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	45	270	71	386
11147b	B2/0.2	11-51490	28/11/2011	Fill *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND
11147b	B10/0.2	11-51490	28/11/2011	Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND
Fill																																		
11147b	B2/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B4/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B5/0.2	11-51490	28/11/2011	Fill	<0.1	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<30	<0.5	<10	<30	<0.5	<1	<10	<0.5	ND	ND	<20	<20	<50	<50	ND
11147b	B6/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/0.5	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.2	11-51490	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B509/0.2 (QAQC)*	*11-51490*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	*B609/0.2 (QAQC)*	*ME200543-1*	*28/11/2011*	*Fill*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/0.5	11-52461	28/11/2011	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural																																		
11147b	B1/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND
11147b	B1/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B2/1.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND
11147b	B3/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B3/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B4/1.4	11-51490	28/11/2011	Natural	<0.1	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<30	<0.5	<10	<30	<0.5	<1	<10	<0.5	ND	ND	<20	<20	<50	<50	ND
11147b	B5/1.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B6/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B7/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/0.5	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B8/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B9/1.5	11-53065	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11147b	B10/1.0	11-51490	28/11/2011	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	ND

* Crushed rock sample

Table 2: **Soil leachability results (mg/kg)**
Job No: **11147b**
Client: **Peddle Thorp Architects Pty Ltd**
Site: **Lilydale**

				Metals	PAH
Connolly job no.	**Connolly sample no.**	**Lab report no.**	**Date sampled**	**Lead**	**Benzo(a) pyrene**
Category B upper limits (leached)				4	0.004
Category C upper limits (leached)				1	0.001
Soil leached					
B509/0.2	B509/0.2	11-52461	28/11/2011	-	<0.001
B8/0.2	B8/0.2	11-52461	28/11/2011	0.13	-

Appendix 3 NATA endorsed laboratory results

1131490

Chain of custody analysis request

Tel. +61 3 9372 5688

Connolly Environmental

Laboratory: ALS Quote: 2011-165b TN		**Page** 1 **of** 3
Site: LILYDALE	**Collected by:** PC	**Result required:** 5 **days**
Job no: 111476	**Collected on:** 28/11/11	**Contact email:** JAMES@CONNOLLY.COM.AU enquiry@connolly.com.au

Relinquished by	Date	Time	Received by	Date	Time
1	/ /			5/12/11	
2	/ /			/ /	
3	/ /			/ /	

Sample ID	111476 B1/0.2	B1/1.0	B1/1.5	B2/0.2	B2/0.5	B2/0.8	B2/1.0	B2/1.5	B3/0.2	B3/0.5	B3/1.0	B3/1.5	B4/0.2	B4/0.6	B4/1.0	B4/1.4	B5/0.2
Soil or Water [s or w]	S	→															→
Lab ID / Analyte																	
EPA IWRG 621 SCREEN																✓	✓
A-514	✓	✓		✓				✓									
* SM					✓				✓		✓		✓				
PAH					✓				✓								
OCP		✓						✓			✓						
TPH																	

Reporting Limits:	**Low reporting limits required for groundwaters as specified by**
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
* SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:				
	X	PDF	X	Result Format
	X	ESDAT	X	Connolly Format

Connolly Environmental Pty Ltd ACN 151 466 705

Chain of custody analysis request

Tel. +61 3 9372 5688

Connolly Environmental

Laboratory: ALS Quote:	**2011-165b TN**	**Page** 2 **of** 3
Site: LILYDALE	**Collected by:** PC	**Result required:** 5 **days**
Job no: 111476	**Collected on:** 28/11/11	**Contact email:** JAMES@CONNOLLY.COM.AU enquiry@connolly.com.au

Relinquished by	Date	Time	Received by	Date	Time
1	/ /			5/12/11	
2	/ /			/ /	
3	/ /			/ /	

Sample ID	111476 B5/0.5	B5/1.0	B5/1.5	B6/0.2	B6/0.5	B6/1.0	B6/1.5	B7/0.2	B7/0.5	B7/1.0	B8/0.2	B8/0.5	B8/1.0	B8/1.5	B9/0.2	B9/0.5	B9/1.0
Soil or Water [s or w]	S	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Lab ID / Analyte																	
A-S14																	
SM			✓	✓	✓	✓			✓	✓	✓	✓			✓		✓
PAH															✓		
OCP			✓			✓				✓		✓					✓
TPH																	

Reporting Limits:	**Low reporting limits required for groundwaters as specified by**
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:				
	X	PDF	X	Result Format
	X	ESDAT	X	Connolly Format

Chain of custody analysis request

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Connolly Environmental

Laboratory: ALS Quote:	2011-165b TN	Page 3 of 3
Site: LILYDALE	Collected by: PC	Result required: 5 days
Job no: 111426	Collected on: 28/11/11	Contact email: JAMES@CONNOLLY.COM.AU
		enquiry@connolly.com.au

Relinquished by	Date	Time	Received by	Date	Time
1	/ /			6/12/11	
2	/ /			/ /	
3	/ /			/ /	

Sample ID	111426 B9/1.5	B10/0.2	B10/0.5	B10/1.0	BS09/0.2	BS10/0.2
Soil or Water [s or w]	s	s	s	s	s	s
Lab ID / Analyte						
A-S14		✓		✓		
SM					✓	
PAH					✓	
OCP				✓		

Reporting Limits:	Low reporting limits required for groundwaters as specified by
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:	X	PDF	X	Result Format
	X	ESDAT	X	Connolly Format

#11-51490

Chain of custody analysis request

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Connolly Environmental

Laboratory: ALS Quote:	**2011-165b TN**		**Page** 1 **of** 3
Site: LILYDALE	**Collected by:** PC	**Result required:**	5 **days**
Job no: 111476	**Collected on:** 29/11/11	**Contact email:** JAMES@CONNOLLY.COM.AU	
		enquiry@connolly.com.au	

Relinquished by	Date	Time	Received by	Date	Time
1 [signature]	6/12/11	1015	Peter van Eeten	6/12/11	1015
2	/ /		Carmin	6/12/11	11:30
3	/ /			/ /	

Sample ID	111476 B1/0.2	B1/1.0	B1/1.5	B2/0.2	B2/0.5	B2/0.8	B2/1.0	B2/1.5	B3/0.2	B3/0.5	B3/1.0	B3/1.5	B4/0.2	B4/0.6	B4/1.0	B4/1.5	B5/0.2
Soil or Water [s or w]	S	→															→
Lab ID / Analyte																	
EPA IWRG 621 SCREEN TZ																✓	✓
A-514	✓	✓		✓				✓									
* SM					✓				✓		✓		✓				
PAH					✓				✓								
OCP		✓						✓			✓						
TPH																	

Reporting Limits:	**Low reporting limits required for groundwaters as specified by**
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
* SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:	X	PDF	X	Result Format
	X	ESDAT	X	Connolly Format

Chain of custody analysis request Tel. +61 3 9372 5688

Connolly Environmental

Laboratory: ALS Quote:	2011-165b TN	Page 2 of 3
Site: LILYDALE	Collected by: PC	Result required: 5 days
Job no: 111476	Collected on: 29/11/11	Contact email: JAMES@CONNOLLY.COM.AU
		enquiry@connolly.com.au

Relinquished by	Date	Time	Received by	Date	Time
1	6/12/11	1015	Peter van Eeten	6/12/11	1015
2	/ /			/ /	
3	/ /			/ /	

Sample ID	111476 B5/0.5	B5/1.0	B5/1.5	B6/0.2	B6/0.5	B6/1.0	B6/1.5	B7/0.2	B7/0.5	B7/1.0	B8/0.2	B8/0.5	B8/1.0	B8/1.5	B9/0.2	B9/0.5	B9/1.0
Soil or Water [s or w]	S	→															→
Analyte / Lab ID																	
A-S14																	
SM			✓	✓	✓	✓			✓	✓	✓	✓			✓		✓
PAH															✓		
OCP			✓			✓				✓		✓					✓
TPH																	

Reporting Limits:	Low reporting limits required for groundwaters as specified by
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:	X	PDF	X	Result Format
	X	ESDAT	X	Connolly Format

Chain of custody analysis request

Tel. +61 3 9372 5688

Connolly Environmental

Laboratory: ALS Quote:	2011-165b TN		Page 3 of 3
Site: LILYDALE	Collected by: PC	Result required: 5 days	
Job no: 11476	Collected on: 29/11/11	Contact email: JAMES@CONNOLLY.COM.AU	
		enquiry@connolly.com.au	

Relinquished by	Date	Time	Received by	Date	Time
1 [signature]	6/12/11	1015	Peter van Eeten	6/12/11	1015
2	/ /			/ /	
3	/ /			/ /	

Sample ID	11476 B9/1.5	B10/0.2	B10/0.5	B10/1.0	BS09/0.2	BS10/0.2	B1/0.6
Soil or Water [s or w]	s	→	→	→	→	→	→
Lab ID / Analyte							
A-S14		✓		✓			
SM					✓		
PAH					✓		
OCP				✓			

Reporting Limits:	Low reporting limits required for groundwaters as specified by
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:

X	PDF	X	Result Format
X	ESDAT	X	Connolly Format

ALS Group

Environmental Division (Water Resources Group)

CERTIFICATE OF ANALYSIS

Batch No:	**11-51490**	*Page*	Page 1 of 15
Final Report	269368	*Laboratory*	Scoresby Laboratory
		Address	Caribbean Business Park, 22 Dalmore Drive, Scoresby, VIC 3179
		Phone	03 8756 8000
		Fax	03 9763 1862
Client:	**Connolly Environmental**		
Contact:	**James Allison**	Contact:	Tuyen Nguyen Client Manager Tuyen.Nguyen@alsglobal.com
Address:	142 Dynon Road WEST MELBOURNE VIC 3003		
Client Program Ref:	**11147b - Lilydale**	Date Sampled:	28-Nov-2011
ALS Program Ref:	**CONNOLLY**	Date Samples Received:	06-Dec-2011
PO No:	**Not Available**	*Date Issued:*	**12-Dec-2011**

The sample(s) referred to in this report were analysed by the following method(s):

- NATA accreditation does not cover the performance of this service

Analysis	*Method*	*Laboratory*	*Analysis*	*Method*	*Laboratory*	*Analysis*	*Method*	*Laboratory*
CHC	VIC-CM045	Melbourne	**Cyanide**	VIC-CM073	Melbourne	**Total Fluoride**	VIC-CM090	Melbourne
HVOL	VIC-CM047	Melbourne	**MAH**	VIC-CM051 & CM047	Melbourne	**MS Total Metals**	VIC-CM050 C	Melbourne
OCP	VIC-CM048	Melbourne	**PAH**	VIC-CM043	Melbourne	**PCB**	VIC-CM048	Melbourne
Phenols(Halo)	VIC-CM056	Melbourne	**Phenols(NonHalo)**	VIC-CM056	Melbourne	**Total Cr 6+**	VIC-CM089	Melbourne
TPH	VIC-CM030	Melbourne						

NATA This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025. No. 992

Signatories

These results have been electronically signed by the authorised signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11

Name	*Title*	*Name*	*Title*
Hao Zhang	**Principal Organic Chemist**	**John Earl**	**Team Leader - Metals**
Michael Clahsen	**Principal Inorganic Chemist**	**Stuart Paarman**	**Technical Officer - Chem**

Batch No: **11-51490**

Report Number: **269368**

Client: **Connolly Environmental**

Client Program Ref: **11147b - Lilydale**

Soil Analysis

Sample	Sampled Date	Your Ref	Sample Type	Total Fluoride	Cyanide	Total Cr 6+
			Component:	Total Fluoride	CN	Total Cr6+
			Units:	mg/kg	mg/kg	mg/kg
2843495	28-11-11	B4/1.4	SOIL	960	<5	<1
2843496	28-11-11	B5/0.2	SOIL	<100	<5	<1

Soil Metals

Sample	Sampled Date	Your Ref	Sample Type	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals
			Component:	As	Cd	Cr	Cu	Pb	Hg	Mo	Ni	Se
			Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
2843480	28-11-11	B1/0.2	SOIL	8	<0.2	24	6	9	<0.05		12	
2843481	28-11-11	B1/1.0	SOIL	<5	<0.2	15	<5	12	0.05		<5	
2843483	28-11-11	B2/0.2	SOIL	<5	0.4	5	<5	8	<0.05		<5	
2843484	28-11-11	B2/0.5	SOIL	<5	<0.2	8	<5	15	<0.05		<5	
2843487	28-11-11	B2/1.5	SOIL	5	<0.2	9	<5	15	0.05		<5	
2843488	28-11-11	B3/0.2	SOIL	<5	<0.2	38	49	6	<0.05		100	
2843490	28-11-11	B3/1.0	SOIL	<5	<0.2	9	<5	12	<0.05		<5	
2843492	28-11-11	B4/0.2	SOIL	<5	<0.2	8	<5	22	0.07		7	
2843495	28-11-11	B4/1.4	SOIL	5	<0.2		<5	20	0.05	<5	<5	10
2843496	28-11-11	B5/0.2	SOIL	<5	<0.2		6	29	0.06	<5	<5	<3
2843499	28-11-11	B5/1.5	SOIL	<5	<0.2	19	<5	18	<0.05		<5	
2843500	28-11-11	B6/0.2	SOIL	<5	<0.2	6	<5	10	<0.05		<5	
2843502	28-11-11	B6/0.5	SOIL	<5	<0.2	9	<5	11	<0.05		<5	
2843503	28-11-11	B6/1.0	SOIL	<5	<0.2	11	<5	12	<0.05		<5	
2843506	28-11-11	B7/0.5	SOIL	<5	<0.2	37	30	18	0.05		56	
2843507	28-11-11	B7/1.0	SOIL	<5	<0.2	<5	<5	10	<0.05		<5	
2843508	28-11-11	B8/0.2	SOIL	<5	<0.2	8	5	33	<0.05		<5	
2843509	28-11-11	B8/0.5	SOIL	<5	<0.2	8	<5	14	<0.05		<5	
2843512	28-11-11	B9/0.2	SOIL	<5	<0.2	15	10	20	<0.05		10	
2843514	28-11-11	B9/1.0	SOIL	<5	<0.2	13	<5	11	<0.05		<5	
2843516	28-11-11	B10/0.2	SOIL	<5	0.3	21	15	39	<0.05		21	
2843518	28-11-11	B10/1.0	SOIL	<5	0.5	10	<5	18	0.12		10	
2843519	28-11-11	B509/0.2	SOIL	6	2.7	25	14	19	0.08		16	

Batch No: **11-51490**
Report Number: **269368**
Client: **Connolly Environmental**
Client Program Ref: **11147b - Lilydale**

Soil Metals

Sample	Sampled Date	Your Ref	Sample Type	Ag (MS Total Metals) mg/kg	Sn (MS Total Metals) mg/kg	Zn (MS Total Metals) mg/kg
2843480	28-11-11	B1/0.2	SOIL			20
2843481	28-11-11	B1/1.0	SOIL			5
2843483	28-11-11	B2/0.2	SOIL			36
2843484	28-11-11	B2/0.5	SOIL			<5
2843487	28-11-11	B2/1.5	SOIL			13
2843488	28-11-11	B3/0.2	SOIL			52
2843490	28-11-11	B3/1.0	SOIL			<5
2843492	28-11-11	B4/0.2	SOIL			18
2843495	28-11-11	B4/1.4	SOIL	<5	<5	11
2843496	28-11-11	B5/0.2	SOIL	<5	<5	22
2843499	28-11-11	B5/1.5	SOIL			<5
2843500	28-11-11	B6/0.2	SOIL			24
2843502	28-11-11	B6/0.5	SOIL			14
2843503	28-11-11	B6/1.0	SOIL			<5
2843506	28-11-11	B7/0.5	SOIL			42
2843507	28-11-11	B7/1.0	SOIL			80
2843508	28-11-11	B8/0.2	SOIL			29
2843509	28-11-11	B8/0.5	SOIL			<5
2843512	28-11-11	B9/0.2	SOIL			37
2843514	28-11-11	B9/1.0	SOIL			<5
2843516	28-11-11	B10/0.2	SOIL			41
2843518	28-11-11	B10/1.0	SOIL			47
2843519	28-11-11	B509/0.2	SOIL			36

Soil MAH

Sample	Sampled Date	Your Ref	Sample Type	BENZ (MAH) mg/kg	TOLUENE (MAH) mg/kg	ETHBENZ (MAH) mg/kg	XYLENE (MAH) mg/kg	STYRENE (MAH) mg/kg	CUMENE (MAH) mg/kg	124TMBEN (MAH) mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843496	28-11-11	B5/0.2	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Soil TPH

Sample	Sampled Date	Your Ref	Sample Type	TPH TPHC6+ mg/kg	TPH TPHC10+ mg/kg	TPH TPHC15+ mg/kg	TPH TPHC29+ mg/kg
2843480	28-11-11	B1/0.2	SOIL	<20	45	270	71
2843481	28-11-11	B1/1.0	SOIL	<20	<20	<50	<50
2843483	28-11-11	B2/0.2	SOIL	<20	<20	<50	<50
2843487	28-11-11	B2/1.5	SOIL	<20	<20	<50	<50
2843495	28-11-11	B4/1.4	SOIL	<20	<20	<50	<50
2843496	28-11-11	B5/0.2	SOIL	<20	<20	<50	<50
2843516	28-11-11	B10/0.2	SOIL	<20	<20	<50	<50
2843518	28-11-11	B10/1.0	SOIL	<20	<20	<50	<50

Soil PAH

Sample	Sampled Date	Your Ref	Sample Type	PAH ACE mg/kg	PAH ACY mg/kg	PAH ANT mg/kg	PAH BAA mg/kg	PAH BAP mg/kg	PAH BBF mg/kg	PAH BGP mg/kg	PAH BKF mg/kg	PAH CHR mg/kg
2843480	28-11-11	B1/0.2	SOIL	0.7	1.6	2.0	1.3	0.8	0.7	0.4	0.7	0.9
2843481	28-11-11	B1/1.0	SOIL	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843483	28-11-11	B2/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843484	28-11-11	B2/0.5	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843487	28-11-11	B2/1.5	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843488	28-11-11	B3/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843495	28-11-11	B4/1.4	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843496	28-11-11	B5/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843512	28-11-11	B9/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843516	28-11-11	B10/0.2	SOIL	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1
2843518	28-11-11	B10/1.0	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843519	28-11-11	B509/0.2	SOIL	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1

Batch No: 11-51490
Report Number: 269368
Client: Connolly Environmental
Client Program Ref: 11147b - Lilydale

Soil PAH

Sample	Sampled Date	Your Ref	Sample Type	DBA	FLA	FLU	IPY	NAP	PHE	PYR	TOTPAHs
Analysis:				PAH	PAH	PAH	PAH	PAH	PAH	PAH	PAH
Units:				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
2843480	28-11-11	B1/0.2	SOIL	0.2	3.9	2.1	0.4	5.9	5.7	2.7	30
2843481	28-11-11	B1/1.0	SOIL	<0.1	0.3	0.1	<0.1	0.2	0.4	0.2	1.4
2843483	28-11-11	B2/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843484	28-11-11	B2/0.5	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843487	28-11-11	B2/1.5	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843488	28-11-11	B3/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843495	28-11-11	B4/1.4	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843496	28-11-11	B5/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843512	28-11-11	B9/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843516	28-11-11	B10/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6
2843518	28-11-11	B10/1.0	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843519	28-11-11	B509/0.2	SOIL	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.2	0.7

Soil O.C. Pesticides

Sample	Sampled Date	Your Ref	Sample Type	ABHC	AENDOSUL	ALDR	BBHC	BENDOSUL	cis-Chlordane	trans-Chlordane	DBHC	DDD
Analysis:				OCP	OCP	OCP	OCP	OCP	OCP	OCP	OCP	OCP
Units:				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
2843481	28-11-11	B1/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843487	28-11-11	B2/1.5	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843490	28-11-11	B3/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843495	28-11-11	B4/1.4	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843496	28-11-11	B5/0.2	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843499	28-11-11	B5/1.5	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843503	28-11-11	B6/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843507	28-11-11	B7/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843509	28-11-11	B8/0.5	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843514	28-11-11	B9/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843518	28-11-11	B10/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Batch No: **11-51490**
Report Number: **269368**
Client: **Connolly Environmental**
Client Program Ref: **11147b - Lilydale**

Soil O.C. Pesticides

Sample	Sampled Date	Your Ref	Sample Type	DDE (OCP) mg/kg	DDT (OCP) mg/kg	DIEL (OCP) mg/kg	ENDOS (OCP) mg/kg	ENDR (OCP) mg/kg	ENDRALD (OCP) mg/kg	ENDRKET (OCP) mg/kg	HCB (OCP) mg/kg	HEPEP (OCP) mg/kg
2843481	28-11-11	B1/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843487	28-11-11	B2/1.5	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843490	28-11-11	B3/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843495	28-11-11	B4/1.4	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843496	28-11-11	B5/0.2	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843499	28-11-11	B5/1.5	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843503	28-11-11	B6/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843507	28-11-11	B7/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843509	28-11-11	B8/0.5	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843514	28-11-11	B9/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843518	28-11-11	B10/1.0	SOIL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Soil O.C. Pesticides

Sample	Sampled Date	Your Ref	Sample Type	HEPT (OCP) mg/kg	LIND (OCP) mg/kg	METHOX (OCP) mg/kg
2843481	28-11-11	B1/1.0	SOIL	<0.05	<0.05	<0.05
2843487	28-11-11	B2/1.5	SOIL	<0.05	<0.05	<0.05
2843490	28-11-11	B3/1.0	SOIL	<0.05	<0.05	<0.05
2843495	28-11-11	B4/1.4	SOIL	<0.05	<0.05	<0.05
2843496	28-11-11	B5/0.2	SOIL	<0.05	<0.05	<0.05
2843499	28-11-11	B5/1.5	SOIL	<0.05	<0.05	<0.05
2843503	28-11-11	B6/1.0	SOIL	<0.05	<0.05	<0.05
2843507	28-11-11	B7/1.0	SOIL	<0.05	<0.05	<0.05
2843509	28-11-11	B8/0.5	SOIL	<0.05	<0.05	<0.05
2843514	28-11-11	B9/1.0	SOIL	<0.05	<0.05	<0.05
2843518	28-11-11	B10/1.0	SOIL	<0.05	<0.05	<0.05

Soil PCBs

Sample	Sampled Date	Your Ref	Sample Type	1016ARCL (PCB) mg/kg	1221ARCL (PCB) mg/kg	1232ARCL (PCB) mg/kg	1242ARCL (PCB) mg/kg	1248ARCL (PCB) mg/kg	1254ARCL (PCB) mg/kg	1260ARCL (PCB) mg/kg	TOTPCB (PCB) mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843496	28-11-11	B5/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Batch No: **11-51490**
Report Number: **269368**
Client: **Connolly Environmental**
Client Program Ref: **11147b - Lilydale**

Soil CHCs

Sample	Sampled Date	Your Ref	Sample Type	1234TCB	1235TCB	123TCB	1245TCB	124TCB	12DCB	135TCB	13DCB	14DCB
Analysis:				CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC
Units:				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843496	28-11-11	B5/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Soil CHCs

Sample	Sampled Date	Your Ref	Sample Type	2CLNAPHT	BENZALCL	BENZTCL	BENZYLCL	HEXCLANE	HEXCLBUT	HEXCLCYP	PENTCLBE
Analysis:				CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC
Units:				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843496	28-11-11	B5/0.2	SOIL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Phenols (Halogenated)

Sample	Sampled Date	Your Ref	Sample Type	4Chlor3MethylPhnl	2-ChloroPhenol	24DiChloroPhenol	2,6DiChloroPhenol	PentaChlorPhenol	2345TetraChloPhnl	2346TetraChloPhnl	2356TetraChloPhnl	245TriChlorPhenol
Analysis:				Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)
Units:				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843496	28-11-11	B5/0.2	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Phenols (Halogenated)

Sample	Sampled Date	Your Ref	Sample Type	246TriChlorPhenol	Total Phenols (Halo)
Analysis:				Phenols(Halo)	Phenols(Halo)
Units:				mg/kg	mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.5	<0.5
2843496	28-11-11	B5/0.2	SOIL	<0.5	<0.5

Phenols (Non Halogenated)

Sample	Sampled Date	Your Ref	Sample Type	Phenol	Total Cresols	2,4DiMethylPhenol	2,4-Dinitrophenol	2Mthyl46DiNitrPhnl	2-NitroPhenol	4-NitroPhenol	2CyHxl46DiNitPhnl	Dinoseb
Analysis:				Phenols(NonHalo)	Phenols(NonHalo)	Phenols(NonHalo)	Phenols(NonHalo)	Phenols(NonHalo)	Phenols(NonHalo)	Phenols(NonHalo)	Phenols(NonHalo)	Phenols(NonHalo)
Units:				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.5	<1	<0.5	<30	<10	<0.5	<0.5	<30	<10
2843496	28-11-11	B5/0.2	SOIL	<0.5	<1	<0.5	<30	<10	<0.5	<0.5	<30	<10

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Batch No: **11-51490**
Report Number: **269368**
Client: **Connolly Environmental**
Client Program Ref: **11147b - Lilydale**

Phenols (Non Halogenated)

Sample	Sampled Date	Your Ref	Analysis:	Phenols(NonHalo)
			Component: / Units: / Sample Type	Total Phenols(NonH) mg/kg
2843495	28-11-11	B4/1.4	SOIL	<30
2843496	28-11-11	B5/0.2	SOIL	<30

Soil Halo. Volatiles

Sample	Sampled Date	Your Ref	Analysis:	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL
			Component: / Units: / Sample Type	1112TetraClEthane mg/kg	1122TetraClEthane mg/kg	1,1DiChloroEthane mg/kg	1,1DiChloroEthene mg/kg	11DiChlorPropene mg/kg	123TriChlPropane mg/kg	12DiBr3ChlPrpane mg/kg	12DiChlorEthene[c] mg/kg	12DiChlorEthene[t] mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843496	28-11-11	B5/0.2	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Halo. Volatiles

Sample	Sampled Date	Your Ref	Analysis:	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL
			Component: / Units: / Sample Type	12DiChloroEthane mg/kg	12 DiChloPropane mg/kg	13DiChlorPropane mg/kg	13DiChlPropene[c] mg/kg	13DiChlPropene[t] mg/kg	22DiChlorPropane mg/kg	2-ChloroToluene mg/kg	4-ChloroToluene mg/kg	BromChloMethane mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843496	28-11-11	B5/0.2	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Halo. Volatiles

Sample	Sampled Date	Your Ref	Analysis:	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL
			Component: / Units: / Sample Type	BroDiChloMethane mg/kg	BromoBenzene mg/kg	Bromoform mg/kg	CarbonTetChloride mg/kg	Chloroform mg/kg	ChloroBenzene mg/kg	DiBroChloMethane mg/kg	DiBromoMethane mg/kg	12DiBromoEthane mg/kg
2843495	28-11-11	B4/1.4	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843496	28-11-11	B5/0.2	SOIL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Halo. Volatiles

Sample	Sampled Date	Your Ref	Analysis:	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL
			Component: / Units: / Sample Type	DiChloroMethane mg/kg	TriChloFluMethane mg/kg	TetraChloroEthene mg/kg	Vinyl Chloride mg/kg	111TriChlorEthane mg/kg	112TriChlorEthane mg/kg	TriChloroEthene mg/kg
2843495	28-11-11	B4/1.4	SOIL	<1	<2	<0.5	<1	<0.5	<0.5	<0.5
2843496	28-11-11	B5/0.2	SOIL	<1	<2	<0.5	<1	<0.5	<0.5	<0.5

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Batch No: **11-51490**

Report Number: **269368**

Client: **Connolly Environmental**

Client Program Ref: **11147b - Lilydale**

Quality Control

Soil CHCs

	CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC
	1234TCB	1235TCB	123TCB	1245TCB	124TCB	12DCB	135TCB	13DCB	14DCB
2843580 DUPLICATE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 DUPLICATE Duplicate Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843580 SPIKE Sample Value	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 SPIKE Expected Value	1.4		1.4	2.7	1.4	1.4	1.4	1.4	1.4
2843580 SPIKE % Recovery	**77.8**		**86.4**	**74.8**	**90.0**	**93.0**	**87.6**	**84.2**	**84.6**
2847025 BLANK Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Soil CHCs

	CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC
	2CLNAPHT	BENZALCL	BENZTCL	BENZYLCL	HEXCLANE	HEXCLBUT	HEXCLCYP	PENTCLBE
2843580 DUPLICATE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 DUPLICATE Duplicate Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843580 SPIKE Sample Value	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1
2843580 SPIKE Expected Value	1.4	1.4	1.4		1.4	1.4	1.4	1.4
2843580 SPIKE % Recovery	**86.8**	**88.2**	**89.4**		**86.4**	**87.8**	**82.2**	**84.8**
2847025 BLANK Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Soil Halo. Volatiles

	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL
	1112TetraClEthane	1122TetraClEthane	1,1DiChloroEthane	1,1DiChloroEthene	11DiChlorPropene	123TriChlPropane	12DiBr3ChlPrpane	12DiChlorEthene[c]	12DiChlorEthene[t]
2844792 DUPLICATE Sample Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2844792 DUPLICATE Duplicate Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2844792 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2847077 BLANK Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Halo. Volatiles

	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL	HVOL
	12DiChloroEthane	12 DiChloPropane	13DiChlorPropane	13DiChlPropene[c]	13DiChlPropene[t]	22DiChlorPropane	2-ChloroToluene	4-ChloroToluene	BromChloMethane
2844792 DUPLICATE Sample Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2844792 DUPLICATE Duplicate Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2844792 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2847077 BLANK Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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Soil Halo. Volatiles

	HVOL BroDiChloMethane	HVOL BromoBenzene	HVOL Bromoform	HVOL CarbonTetChloride	HVOL Chloroform	HVOL ChloroBenzene	HVOL DiBroChloMethane	HVOL DiBromoMethane	HVOL 12DiBromoEthane
2844792 DUPLICATE Sample Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2844792 DUPLICATE Duplicate Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2844792 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2847077 BLANK Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Halo. Volatiles

	HVOL DiChloroMethane	HVOL TriChloFluMethane	HVOL TetraChloroEthene	HVOL Vinyl Chloride	HVOL 111TriChlorEthane	HVOL 112TriChlorEthane	HVOL TriChloroEthene
2844792 DUPLICATE Sample Value	<1	<2	<0.5	<1	<0.5	<0.5	<0.5
2844792 DUPLICATE Duplicate Value	<1	<2	<0.5	<1	<0.5	<0.5	<0.5
2844792 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2847077 BLANK Value	<1	<2	<0.5	<1	<0.5	<0.5	<0.5

Soil MAH

	MAH BENZ	MAH TOLUENE	MAH ETHBENZ	MAH XYLENE	MAH STYRENE	MAH CUMENE	MAH 124TMBEN
2843558 DUPLICATE Sample Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843558 DUPLICATE Duplicate Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843558 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2844719 SPIKE Sample Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2844719 SPIKE Expected Value	4.3	4.3	4.3	13	4.3	4.3	4.3
2844719 SPIKE % Recovery	**99.3**	**97.9**	**97.8**	**97.3**	**92.1**	**95.5**	**88.1**
2847072 BLANK Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Soil O.C. Pesticides

	OCP ABHC	OCP AENDOSUL	OCP ALDR	OCP BBHC	OCP BENDOSUL	OCP cis-Chlordane	OCP trans-Chlordane	OCP DBHC	OCP DDD
2843580 DUPLICATE Sample Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843580 DUPLICATE Duplicate Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843580 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843566 SPIKE Sample Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843566 SPIKE Expected Value	3.1	1.6	1.6	2.7	1.6	1.6	1.6	3.1	1.6
2843566 SPIKE % Recovery	**95.6**	**108**	**115**	**102**	**105**	**116**	**114**	**110**	**103**
2847045 BLANK Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Soil O.C. Pesticides

	OCP DDE	OCP DDT	OCP DIEL	OCP ENDOS	OCP ENDR	OCP ENDRALD	OCP ENDRKET	OCP HCB	OCP HEPEP
2843580 DUPLICATE Sample Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843580 DUPLICATE Duplicate Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

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	OCP DDE	OCP DDT	OCP DIEL	OCP ENDOS	OCP ENDR	OCP ENDRALD	OCP ENDRKET	OCP HCB	OCP HEPEP
2843580 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843566 SPIKE Sample Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2843566 SPIKE Expected Value	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.8	1.6
2843566 SPIKE % Recovery	**108**	**111**	**104**	**94.4**	**97.4**	**91.2**	**107**	**103**	**113**
2847045 BLANK Value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Soil O.C. Pesticides

	OCP HEPT	OCP LIND	OCP METHOX
2843580 DUPLICATE Sample Value	<0.05	<0.05	<0.05
2843580 DUPLICATE Duplicate Value	<0.05	<0.05	<0.05
2843580 DUPLICATE % RPD	**0**	**0**	**0**
2843566 SPIKE Sample Value	<0.05	<0.05	<0.05
2843566 SPIKE Expected Value	1.6	3.1	1.6
2843566 SPIKE % Recovery	**109**	**98.2**	**120**
2847045 BLANK Value	<0.05	<0.05	<0.05

Soil PAH

	PAH ACE	PAH ACY	PAH ANT	PAH BAA	PAH BAP	PAH BBF	PAH BGP	PAH BKF	PAH CHR
2843341 DUPLICATE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843341 DUPLICATE Duplicate Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843341 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843578 SPIKE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843578 SPIKE Expected Value	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
2843578 SPIKE % Recovery	**95.0**	**96.0**	**99.0**	**88.0**	**102**	**96.0**	**102**	**96.0**	**104**
2846785 BLANK Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 SPIKE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 SPIKE Expected Value	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
2843580 SPIKE % Recovery	**92.4**	**99.8**	**107**	**101**	**98.4**	**102**	**99.4**	**91.2**	**101**
2843566 DUPLICATE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843566 DUPLICATE Duplicate Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843566 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2847038 BLANK Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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Soil PAH	PAH	PAH	PAH	PAH	PAH	PAH	PAH	PAH
	DBA	FLA	FLU	IPY	NAP	PHE	PYR	TOTPAHs
2843341 DUPLICATE Sample Value	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
2843341 DUPLICATE Duplicate Value	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
2843341 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**5.6**	**0**	**0**	**0.0**
2843578 SPIKE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
2843578 SPIKE Expected Value	1.3	1.3	1.3	1.3	1.3	1.3	1.3	
2843578 SPIKE % Recovery	**113**	**92.0**	**97.0**	**104**	**103**	**97.0**	**94.0**	
2846785 BLANK Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 SPIKE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
2843580 SPIKE Expected Value	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
2843580 SPIKE % Recovery	**113**	**105**	**97.4**	**120**	**100**	**108**	**107**	
2843566 DUPLICATE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843566 DUPLICATE Duplicate Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843566 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2847038 BLANK Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Soil PCBs	PCB	PCB	PCB	PCB	PCB	PCB	PCB	PCB
	1016ARCL	1221ARCL	1232ARCL	1242ARCL	1248ARCL	1254ARCL	1260ARCL	TOTPCB
2843580 DUPLICATE Sample Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 DUPLICATE Duplicate Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2843580 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843580 SPIKE Sample Value	<0.1						<0.1	
2843580 SPIKE Expected Value	2.6						2.5	
2843580 SPIKE % Recovery	**102**						**103**	
2847050 BLANK Value	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Phenols (Halogenated)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)	Phenols(Halo)
	4Chlor3MethylPhnl	2-ChloroPhenol	24DiChloroPhenol	2,6DiChloroPhenol	PentaChlorPhenol	2345TetraChloPhnl	2346TetraChloPhnl	2356TetraChloPhnl	245TriChlorPhenol
2843580 DUPLICATE Sample Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843580 DUPLICATE Duplicate Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2843580 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843566 SPIKE Sample Value	<0.5	<0.5	<0.5	<0.5			<0.5		<0.5
2843566 SPIKE Expected Value	1.6	1.6	1.6	1.6			3.1		1.6
2843566 SPIKE % Recovery	**96.8**	**96.0**	**92.8**	**87.2**			**79.2**		**82.2**
2847033 BLANK Value	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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Phenols (Halogenated)

	Phenols(Halo) 246TriChlorPhenol	Phenols(Halo) Total Phenols (Halo)
2843580 DUPLICATE Sample Value	<0.5	<0.5
2843580 DUPLICATE Duplicate Value	<0.5	<0.5
2843580 DUPLICATE % RPD	**0**	**0**
2843566 SPIKE Sample Value	<0.5	
2843566 SPIKE Expected Value	1.6	
2843566 SPIKE % Recovery	**78.8**	
2847033 BLANK Value	<0.5	<0.5

Phenols (Non Halogenated)

	Phenols(NonHalo) Phenol	Phenols(NonHalo) Total Cresols	Phenols(NonHalo) 2,4DiMethylPhenol	Phenols(NonHalo) 2,4-Dinitrophenol	Phenols(NonHalo) 2Mthyl46DiNitrPhnl	Phenols(NonHalo) 2-NitroPhenol	Phenols(NonHalo) 4-NitroPhenol	Phenols(NonHalo) 2CyHxl46DiNitPhnl	Phenols(NonHalo) Dinoseb
2843580 DUPLICATE Sample Value	<0.5	<1	<0.5	<30	<10	<0.5	<0.5	<30	<10
2843580 DUPLICATE Duplicate Value	<0.5	<1	<0.5	<30	<10	<0.5	<0.5	<30	<10
2843580 DUPLICATE % RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2843566 SPIKE Sample Value	<0.5	<1	<0.5			<0.5			
2843566 SPIKE Expected Value	1.6	4.7	1.6			1.6			
2843566 SPIKE % Recovery	**96.4**	**92.2**	**94.4**			**92.2**			
2847029 BLANK Value	<0.5	<1	<0.5	<30	<10	<0.5	<0.5	<30	<10

Phenols (Non Halogenated)

	Phenols(NonHalo) Total Phenols(NonH)
2843580 DUPLICATE Sample Value	<30
2843580 DUPLICATE Duplicate Value	<30
2843580 DUPLICATE % RPD	**0**
2847029 BLANK Value	<30

Soil Analysis

	Total Fluoride Total Fluoride	Cyanide CN	Total Cr 6+ Total Cr6+
2843366 SPIKE Sample Value			<1
2843366 SPIKE Expected Value			80
2843366 SPIKE % Recovery			**85.8**
2844192 DUPLICATE Sample Value			<1
2844192 DUPLICATE Duplicate Value			<1
2844192 DUPLICATE % RPD			**0**
2843584 SPIKE Sample Value		<5	
2843584 SPIKE Expected Value		20	
2843584 SPIKE % Recovery		**92.1**	

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

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	Total Fluoride	Cyanide	Total Cr 6+
	Total Fluoride	CN	Total Cr6+
2843366 DUPLICATE Sample Value		<5	
2843366 DUPLICATE Duplicate Value		<5	
2843366 DUPLICATE % RPD		**0**	
2847693 BLANK Value	<100		
2843350 DUPLICATE Sample Value	<100		
2843350 DUPLICATE Duplicate Value	<100		
2843350 DUPLICATE % RPD	**0**		
2843541 SPIKE Sample Value	170		
2843541 SPIKE Expected Value	340		
2843541 SPIKE % Recovery	**84.5**		

Soil Metals

	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals
	As	Cd	Cr	Cu	Pb	Hg	Mo	Ni	Se
2843488 DUPLICATE Sample Value	<5	<0.2	38	49	6			100	
2843488 DUPLICATE Duplicate Value	<5	<0.2	37	51	7			110	
2843488 DUPLICATE % RPD	**0**	**0**	**1.1**	**5.4**	**17.5**			**8.0**	
2843516 SPIKE Sample Value	<5	0.3			39	<0.05		21	
2843516 SPIKE Expected Value	100	100			140	1.0		120	
2843516 SPIKE % Recovery	**81.1**	**101**			**92.8**	**97.8**		**84.2**	
2847239 BLANK Value	<5	<0.2	<5	<5	<5	<0.05	<5	<5	<3
2844477 DUPLICATE Sample Value	<5	<0.2	12	<5	6	<0.05		<5	<3
2844477 DUPLICATE Duplicate Value	<5	<0.2	13	<5	8	<0.05		<5	<3
2844477 DUPLICATE % RPD	**0**	**0**	**6.4**	**0**	**18.3**	**0**		**0**	**0**
2844477 SPIKE Sample Value	<5	<0.2	12	<5	6	<0.05		<5	<3
2844477 SPIKE Expected Value	100	100	110	100	110	1.0		100	100
2844477 SPIKE % Recovery	**86.5**	**99.7**	**82.8**	**80.7**	**92.5**	**95.3**		**84.9**	**88.4**
2847510 BLANK Value	<5	<0.2	<5	<5	<5	<0.05	<5	<5	<3

Soil Metals

	MS Total Metals	MS Total Metals	MS Total Metals
	Ag	Sn	Zn
2843488 DUPLICATE Sample Value			52
2843488 DUPLICATE Duplicate Value			56
2843488 DUPLICATE % RPD			**7.2**
2843516 SPIKE Sample Value			41
2843516 SPIKE Expected Value			140
2843516 SPIKE % Recovery			**87.2**

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

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	MS Total Metals	MS Total Metals	MS Total Metals
	Ag	Sn	Zn
2847239 BLANK Value	<5	<5	<5
2844477 DUPLICATE Sample Value	<5		5
2844477 DUPLICATE Duplicate Value	<5		6
2844477 DUPLICATE % RPD	**0**		**10.6**
2844477 SPIKE Sample Value	<5	<5	5
2844477 SPIKE Expected Value	1.0	100	100
2844477 SPIKE % Recovery	**86.0**	**95.0**	**91.3**
2847510 BLANK Value	<5	<5	<5

Soil TPH	TPH	TPH	TPH	TPH
	TPHC6+	TPHC10+	TPHC15+	TPHC29+
2845039 SPIKE Sample Value			<50	
2845039 SPIKE Expected Value			890	
2845039 SPIKE % Recovery			**106**	
2843734 DUPLICATE Sample Value	<20	<20	<50	<50
2843734 DUPLICATE Duplicate Value	<20	<20	<50	<50
2843734 DUPLICATE % RPD	**0**	**0**	**0**	**0**
2847208 BLANK Value	<20	<20	<50	<50
2843578 DUPLICATE Sample Value	<20	<20	<50	140
2843578 DUPLICATE Duplicate Value	<20	<20	<50	130
2843578 DUPLICATE % RPD	**0**	**0**	**0**	**8.6**
2843578 SPIKE Sample Value			<50	
2843578 SPIKE Expected Value			950	
2843578 SPIKE % Recovery			**104**	
2847950 BLANK Value	<20	<20	<50	<50

11-53065

Connolly Environmental

Chain of custody analysis request

Tel. +61 3 9372 5688

Laboratory: ALS Quote:	**2011-165b TN**		**Page** 1 **of** 1
Site: LILYDALE	**Collected by:** PC	**Result required:** STD **days**	
Job no: 111478	**Collected on:** ~	**Contact email:** JAMES	
		enquiry@connolly.com.au	

Relinquished by	Date	Time	Received by	Date	Time
1	/ /		Jordie Fan	19/12/11	13:00
2	/ /			/ /	
3	/ /			/ /	

Sample ID	111478-B1/1.5	-B2/1.5	-B3/1.5	-B5/1.5	-B6/1.5	-B7/1.0	-B8/1.5	-B9/1.5	-B10/1.0								
Soil or Water [s or w]	S	→							→								
Analyte / Lab ID	2843482	87	91	99	2843504	07	11	15	18								
FL.	✓	✓	✓	✓	✓	✓	✓	✓	✓								

Reporting Limits:	**Low reporting limits required for groundwaters as specified by**
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:	X	PDF	X	**Result Format**
	X	ESDAT	X	**Connolly Format**

Connolly Environmental Pty Ltd ACN 151 466 705

ALS Group

Environmental Division (Water Resources Group)

CERTIFICATE OF ANALYSIS

Batch No:	**11-53065**	*Page*	
Final Report	271733	*Laboratory*	Scoresby Laboratory
		Address	Caribbean Business Park, 22 Dalmore Drive, Scoresby, VIC 3179
		Phone	03 8756 8000
		Fax	03 9763 1862
Client:	**Connolly Environmental**	Contact:	Tuyen Nguyen Client Manager Tuyen.Nguyen@alsglobal.com
Contact:	**James Allison**		
Address:	142 Dynon Road WEST MELBOURNE VIC 3003		
Client Program Ref:	**11147b - Lilydale**	Date Sampled:	06-Dec-2011
ALS Program Ref:	**CONNOLLY**	Date Samples Received:	19-Dec-2011
PO No:	**Not Available**	*Date Issued:*	**22-Dec-2011**

The sample(s) referred to in this report were analysed by the following method(s):

- NATA accreditation does not cover the performance of this service

Analysis	*Method*	*Laboratory*	*Analysis*	*Method*	*Laboratory*	*Analysis*	*Method*	*Laboratory*
Total Fluoride	VIC-CM090	Melbourne						

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

NATA This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025. No. 992

Signatories

These results have been electronically signed by the authorised signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11

Name	*Title*	*Name*	*Title*
Michael Clahsen	**Principal Inorganic Chemist**		

Batch No: **11-53065**
Report Number: **271733**
Client: **Connolly Environmental**
Client Program Ref: **11147b - Lilydale**

Soil Analysis

Sample	Sampled Date	Your Ref	Sample Type	Total Fluoride (Total Fluoride) mg/kg
2860396	06-12-11	B1/1.5	SOIL	440
2860397	06-12-11	B2/1.5	SOIL	460
2860398	06-12-11	B3/1.5	SOIL	640
2860399	06-12-11	B5/1.5	SOIL	300
2860400	06-12-11	B6/1.5	SOIL	350
2860401	06-12-11	B7/1.0	SOIL	960
2860402	06-12-11	B8/1.5	SOIL	400
2860403	06-12-11	B9/1.5	SOIL	380
2860404	06-12-11	B10/1.0	SOIL	800

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Batch No: 11-53065
Report Number: 271733
Client: Connolly Environmental
Client Program Ref: 11147b - Lilydale

Quality Control

Soil Analysis

	Total Fluoride Total Fluoride
2864273 BLANK Value	<100
2858035 DUPLICATE Sample Value	220
2858035 DUPLICATE Duplicate Value	230
2858035 DUPLICATE % RPD	**4.6**
2865772 BLANK Value	<100
2860838 SPIKE Sample Value	230
2860838 SPIKE Expected Value	380
2860838 SPIKE % Recovery	**90.8**

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Connolly Environmental

Chain of custody analysis request

Tel. +61 3 9372 5688

Laboratory: ALS Quote:	2011-165b TN	Page 1 of 1
Site: LILYDALE	Collected by: PC	Result required: 4 days
Job no: 11147B	Collected on:	Contact email: James
		enquiry@connolly.com.au

Relinquished by	Date	Time	Received by	Date	Time
1	/ /			13/12/11	1500
2	/ /			/ /	
3	/ /			/ /	

Sample ID	11147b-B10/0.2	11147b-B9/0.5	-B8/0.2	-BS09/0.2
Soil or Water [s or w]	s	s	s	s
Lab ID / Analyte	2843516	513	508	519
ASLP BaP				✓
ASLP Pb			✓	
SM		✓		

Reporting Limits:	Low reporting limits required for groundwaters as specified by
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:	X	PDF	X	Result Format
	X	ESDAT	X	Connolly Format

Connolly Environmental

Chain of custody analysis request

Tel. +61 3 9372 5688

Laboratory: ALS Quote: 2011-165b TN		Page 1 of 1
Site: LILYDALE	Collected by: PC	Result required: 4 days
Job no: 11147B	Collected on:	Contact email: James enquiry@connolly.com.au

Relinquished by	Date	Time	Received by	Date	Time
1	/ /			13/12/11	1500
2	/ /			/ /	
3	/ /			/ /	

Sample ID	11147b-B10/0.2	11147b-B9/0.5
Soil or Water [s or w]	S	S
Lab ID / Analyte	2843576	513.
ASLP BaP	✓	
ASLP Pb	✓	
SM		✓

Reporting Limits:	Low reporting limits required for groundwaters as specified by
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and Individual PAH
HVOL1:	HVOL including vinyl chloride
HVOL2:	HVOL including vinyl chloride to 0.002mg/litre - water
VOC:	HVOL, MAH & solvents

Comments:

X	PDF	X	Result Format
X	ESDAT	X	Connolly Format

ALS Group

Environmental Division (Water Resources Group)

CERTIFICATE OF ANALYSIS

Batch No:	**11-52461**	*Page*	
Final Report	270415	*Laboratory*	Scoresby Laboratory
		Address	Caribbean Business Park, 22 Dalmore Drive, Scoresby, VIC 3179
Client:	**Connolly Environmental**	*Phone*	03 8756 8000
		Fax	03 9763 1862
Contact:	**James Allison**	Contact:	Tuyen Nguyen Client Manager Tuyen.Nguyen@alsglobal.com
Address:	142 Dynon Road WEST MELBOURNE VIC 3003		
Client Program Ref:	**11147b - Lilydale**	Date Sampled:	28-Nov-2011
ALS Program Ref:	**CONNOLLY**	Date Samples Received:	14-Dec-2011
PO No:	**Not Available**	*Date Issued:*	**16-Dec-2011**

The sample(s) referred to in this report were analysed by the following method(s):

- NATA accreditation does not cover the performance of this service

Analysis	*Method*	*Laboratory*	*Analysis*	*Method*	*Laboratory*	*Analysis*	*Method*	*Laboratory*
ASLP(Acetate) Prep	VIC-CM082 (AS4439.3)	Melbourne	**ASLP(Acet.) PAH**	VIC-CM043; VIC-CM082	Melbourne	**MS ASLP(Acet) Metals**	VIC-CM050 C; VIC-CM082	Melbourne
MS Total Metals	VIC-CM050 C	Melbourne						

NATA
This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
No. 992

Signatories

These results have been electronically signed by the authorised signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11

Name	*Title*	*Name*	*Title*
Hao Zhang	**Principal Organic Chemist**	**John Earl**	**Team Leader - Metals**

Batch No: 11-52461
Report Number: 270415
Client: Connolly Environmental
Client Program Ref: 11147b - Lilydale

Soil Metals

Sample	Sampled Date	Your Ref	Sample Type	As (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Ni (mg/kg)	Zn (mg/kg)
Analysis:				MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals
2854104	28-11-11	B9/0.5	SOIL	<5	<0.2	52	56	<5	<0.05	100	76

Metals- ASLP (Acetate Buffer)

Sample	Sampled Date	Your Ref	Sample Type	ASLP-Lead (mg/L)
Analysis:				MS ASLP(Acet) Metals
2854105	28-11-11	B8/0.2	SOIL	0.13

ASLP (Acetate Buffer)-PAH

Sample	Sampled Date	Your Ref	Sample Type	BAP (mg/L)
Analysis:				ASLP(Acet.) PAH
2854106	28-11-11	B509/0.2	SOIL	<0.001

Acetate Leachate Preparation

Sample	Sampled Date	Your Ref	Sample Type	Leach Fluid pH (pH units)	pH (post rolling) (pH units)
Analysis:				ASLP(Acetate) Prep	ASLP(Acetate) Prep
2854105	28-11-11	B8/0.2	SOIL	4.9	4.8
2854106	28-11-11	B509/0.2	SOIL	4.9	4.8

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

Batch No: **11-52461**
Report Number: **270415**
Client: **Connolly Environmental**
Client Program Ref: **11147b - Lilydale**

Quality Control

ASLP (Acetate Buffer)-PAH

		ASLP(Acet.) PAH BAP
2855541 SPIKE	Sample Value	<0.001
2855541 SPIKE	Expected Value	0.033
2855541 SPIKE	**% Recovery**	**87.4**
2853561 DUPLICATE	Sample Value	<0.001
2853561 DUPLICATE	Duplicate Value	<0.001
2853561 DUPLICATE	**% RPD**	**0**
2857064 BLANK	Value	<0.001

Metals- ASLP (Acetate Buffer)

		MS ASLP(Acet) Metals ASLP-Lead
2858162 BLANK	Value	<0.01

Soil Metals

		MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals	MS Total Metals
		As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
2855933 BLANK	Value	<5	<0.2	<5	<5	<5	<0.05	<5	<5
2853603 SPIKE	Sample Value					10			
2853603 SPIKE	Expected Value					110			
2853603 SPIKE	**% Recovery**					**93.2**			

Samples tested as received. A blank space indicates no test performed. Soil results expressed in mg/kg dry weight unless specified otherwise. Microbiological testing was commenced within 24 hours of sampling unless otherwise stated. VIC-MM524: Plate count results <10 per mL and >300 per mL are deemed as approximate. VIC-MM526: Plate count results <2,500 per mL and >250,000 per mL are deemed as approximate. Calculated results are based on raw data.

ME200543
8°C

Chain of custody analysis request

Tel. +61 3 9372 5688

Connolly Environmental

Laboratory: SGS		**Page** 1 **of** 1
Site: LILYDALE	**Collected by:** PC	**Result required:** 5 **days**
Job no: 11147B	**Collected on:** 29/11/11	**Contact name:** JAMES
		enquiry@connolly.com.au

Relinquished by	**Date**	**Time**	**Received by**	**Date**	**Time**
1 Luke Sullivan	6/12/11	9:30	Tracy	6/12/11	9:30
2	/ /			/ /	
3	/ /			/ /	

Sample ID	11147B-B609/0.2	11147B-B610/0.2															
Soil or Water [s or w]	S	S															
Lab ID / **Analyte**	1																
* SM	✓																
PAH	✓																

Reporting Limits:	**Low reporting limits required for groundwaters as specified by**
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
* SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
Individual Phenols:	Phenols 8040
Connolly screen:	EPA screen as per 448 plus phenols & cresols, CHC, HVOL, pH and sulphate

Comments:

X	PDF	X	Result Format
X	ESDAT	X	Connolly Format

Chain of custody analysis request   Tel. +61 3 9372 5688   Connolly Environmental

Laboratory: SGS		Page 1 of 1
Site: LILYDALE	Collected by: PC	Result required: 5 days
Job no: 11147B	Collected on: 28/11/11	Contact name: JAMES
		enquiry@connolly.com.au

Relinquished by	Date	Time	Received by	Date	Time
1	/ /			/ /	
2	/ /			/ /	
3	/ /			/ /	

Sample ID	11147B-B609/0.2
Soil or Water [s or w]	S
Lab ID / Analyte	
* SM	✓
PAH	✓

updated COC

Reporting Limits:	Low reporting limits required for groundwaters as specified by
TPH:	TPH by GC; C6-C9, C10-C14, C15-C28, >C28
* SM:	Screen metals: Pb, Ni, Cd, Cr, Cu, Zn, As, Hg
Composites:	Please do not analyse TPH, MAH or volatiles on composite samples but on the first individual sample of the requested composite (unless otherwise indicated).
PAH:	Total and individual PAH
Individual Phenols:	Phenols 8040
Connolly screen:	EPA screen as per 448 plus phenols & cresols, CHC, HVOL, pH and sulphate

Comments:

X	PDF	X	Result Format
X	ESDAT	X	Connolly Format

AU.SampleReceipt.Melbourne (Melbourne)

From: Fode, Nicole (Melbourne)
Sent: Monday, 5 December 2011 3:22 PM
To: AU.SampleReceipt.Melbourne (Melbourne)
Subject: FW: Analysis
Attachments: 20111205150329974.pdf

For you ☺

Regards,

Nicole Fode
Environmental Services
Client Services

SGS Australia Pty Ltd
34 Norfolk Court
Coburg Vic 3058
Australia
Phone: +61 3 9350 4800
Fax: +61 3 9350 4871
Email: Nicole.Fode@sgs.com
Web www.au.sgs.com
To provide your valuable feedback & help us to improve, please click here

---

From: James Allison [mailto:James@connolly.com.au]
Sent: Monday, 5 December 2011 3:07 PM
To: Fode, Nicole (Melbourne)
Subject: FW: Analysis

Nicole,
Please find attached analysis for lilydale...

From: James Allison
Sent: Monday, 5 December 2011 3:05 PM
To: Durukan, Sue (Melbourne)
Subject: Analysis

Sue,
Please find attached analysis schedule for Lilydale, connolly job no. 11147b.

Regards,

James Allison | Environmental Scientist

Connolly Environmental • 142 Dynon Rd, West Melbourne, VIC 3003 Australia
Phone +61 3 9372 5688 • Mobile 0423 884 133 • Fax +61 3 9372 5699
james@connolly.com.au | www.connolly.com.au

ANALYTICAL REPORT

CLIENT DETAILS		LABORATORY DETAILS	
Contact	James Allison	Manager	Aaron Stott
Client	Connolly Environmental	Laboratory	SGS Victoria Environmental
Address	142 Dynon Rd WEST MELBOURNE VIC 3003	Address	34 Norfolk Ct Coburg VIC 3058
Telephone	03 9372 5688	Telephone	+61 3 9350 4800
Facsimile	61	Facsimile	+61 3 9350 4871
Email	james@connolly.com.au	Email	au.environmental.melbourne@sgs.com
Project	**Lilydale 11147B**	SGS Reference	ME200543 R0
Order Number	(Not specified)	Report Number	0000001543
Samples	1	Date Reported	14 Dec 2011
		Date Received	06 Dec 2011

COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(2076/16881/16882).

PAH and Metals in soil were analysed by SGS Sydney, report no: SE90131

SIGNATORIES

Aaron Stott
Laboratory Manager

Parameter	Units	LOR	Sample Number ME200543.001 Sample Matrix Soil Sample Name 11147B-B609/0.2

Moisture Content Method: AN234

% Moisture	%	0.5	**4.0**

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

Lead, Pb	mg/kg	1	**15**
Nickel, Ni	mg/kg	0.5	**14**
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.3	**14**
Copper, Cu	mg/kg	0.5	**10**
Zinc, Zn	mg/kg	0.5	**28**
Arsenic, As	mg/kg	3	<3

Mercury in Soil Method: AN312

Mercury	mg/kg	0.05	<0.05

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	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)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

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	**92**
d14-p-terphenyl (Surrogate)	%	-	**94**

QC SUMMARY

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	LCS %Recovery
Mercury	LB002926	mg/kg	0.05	<0.05	107%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB002849	mg/kg	0.1	<0.1	0%	83%	
Acenaphthylene	LB002849	mg/kg	0.1	<0.1	0%	82%	
Acenaphthene	LB002849	mg/kg	0.1	<0.1	0%	83%	101%
Fluorene	LB002849	mg/kg	0.1	<0.1	0%	83%	
Phenanthrene	LB002849	mg/kg	0.1	<0.1	0%	81%	
Anthracene	LB002849	mg/kg	0.1	<0.1	0%	80%	
Fluoranthene	LB002849	mg/kg	0.1	<0.1	0%	82%	
Pyrene	LB002849	mg/kg	0.1	<0.1	0%	85%	98%
Benzo(a)anthracene	LB002849	mg/kg	0.1	<0.1	0%	81%	
Chrysene	LB002849	mg/kg	0.1	<0.1	0%	79%	
Benzo(b)fluoranthene	LB002849	mg/kg	0.1	<0.1	0%	74%	
Benzo(k)fluoranthene	LB002849	mg/kg	0.1	<0.1	0%	77%	
Benzo(a)pyrene	LB002849	mg/kg	0.1	<0.1	0%	75%	
Indeno(1,2,3-cd)pyrene	LB002849	mg/kg	0.1	<0.1	0%	74%	
Dibenzo(a&h)anthracene	LB002849	mg/kg	0.1	<0.1	0%	80%	
Benzo(ghi)perylene	LB002849	mg/kg	0.1	<0.1	0%	78%	
Total PAH	LB002849	mg/kg	0.8	<0.8	0%		

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2-fluorobiphenyl (Surrogate)	LB002849	%	-	90%	4%	90%	94%
d14-p-terphenyl (Surrogate)	LB002849	%	-	94%	4%	90%	108%

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

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Lead, Pb	LB002925	mg/kg	1	<1	103%
Nickel, Ni	LB002925	mg/kg	0.5	<0.5	101%
Cadmium, Cd	LB002925	mg/kg	0.3	<0.3	103%
Chromium, Cr	LB002925	mg/kg	0.3	<0.3	100%
Copper, Cu	LB002925	mg/kg	0.5	<0.5	103%
Zinc, Zn	LB002925	mg/kg	0.5	<0.5	105%
Arsenic, As	LB002925	mg/kg	3	<3	103%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
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.
AN234	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.
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
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).

FOOTNOTES

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

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.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

STATEMENT OF QA/QC PERFORMANCE

ME200543 R0

CLIENT DETAILS		LABORATORY DETAILS	
Contact	James Allison	Manager	Aaron Stott
Client	Connolly Environmental	Laboratory	SGS Victoria Environmental
Address	142 Dynon Rd WEST MELBOURNE VIC 3003	Address	34 Norfolk Ct Coburg VIC 3058
Telephone	03 9372 5688	Telephone	+61 3 9350 4800
Facsimile	61	Facsimile	+61 3 9350 4871
Email	james@connolly.com.au	Email	au.environmental.melbourne@sgs.com
Project	**Lilydale 11147B**	SGS Reference	ME200543 R0
Order Number	(Not specified)	Report Number	0000001544
Samples	1	Date Reported	14 Dec 2011

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS Environmental Services' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met.

SAMPLE SUMMARY

Sample counts by matrix	1 Soil	Type of documentation received	COC
Date documentation received	6/12/2011	Samples received in good order	Yes
Samples received without headspace	N/A	Sample temperature upon receipt	8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
11147B-B609/0.2	ME200543.001	LB002926	-	06 Dec 2011	-	14 Dec 2011	-	14 Dec 2011

Moisture Content

Method: ME-(AU)-[ENV]AN234

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
11147B-B609/0.2	ME200543.001	LB002927	-	06 Dec 2011	-	14 Dec 2011	-	14 Dec 2011

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
11147B-B609/0.2	ME200543.001	LB002849	-	06 Dec 2011	-	06 Dec 2011	-	08 Dec 2011

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
11147B-B609/0.2	ME200543.001	LB002925	-	06 Dec 2011	-	14 Dec 2011	-	14 Dec 2011

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	11147B-B609/0.2	ME200543.001	%	60 - 130%	92
d14-p-terphenyl (Surrogate)	11147B-B609/0.2	ME200543.001	%	60 - 130%	94

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB002926.001	Mercury	mg/kg	0.05	<0.05

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB002849.001		Naphthalene	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(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
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	90
		d14-p-terphenyl (Surrogate)	%	-	94

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB002925.001	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
	Arsenic, As	mg/kg	3	<3

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
ME200159A.007	LB002849.004		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	%	-	95.0	99.0	30	4
			d14-p-terphenyl (Surrogate)	%	-	105.0	101.0	30	4

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB002926.002		Mercury	mg/kg	0.05	0.21	0.2	70 - 130	107

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB002849.002		Naphthalene	mg/kg	0.1	4.2	5	60 - 140	83
		Acenaphthylene	mg/kg	0.1	4.1	5	60 - 140	82
		Acenaphthene	mg/kg	0.1	4.2	5	60 - 140	83
		Fluorene	mg/kg	0.1	4.1	5	60 - 140	83
		Phenanthrene	mg/kg	0.1	4.0	5	60 - 140	81
		Anthracene	mg/kg	0.1	4.0	5	60 - 140	80
		Fluoranthene	mg/kg	0.1	4.1	5	60 - 140	82
		Pyrene	mg/kg	0.1	4.3	5	60 - 140	85
		Benzo(a)anthracene	mg/kg	0.1	4.1	5	60 - 140	81
		Chrysene	mg/kg	0.1	4.0	5	60 - 140	79
		Benzo(b)fluoranthene	mg/kg	0.1	3.7	5	60 - 140	74
		Benzo(k)fluoranthene	mg/kg	0.1	3.9	5	60 - 140	77
		Benzo(a)pyrene	mg/kg	0.1	3.7	5	60 - 140	75
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	3.7	5	60 - 140	74
		Dibenzo(a&h)anthracene	mg/kg	0.1	4.0	5	60 - 140	80
		Benzo(ghi)perylene	mg/kg	0.1	3.9	5	60 - 140	78
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	90.0	100	60 - 140	90
		d14-p-terphenyl (Surrogate)	%	-	90.0	100	60 - 140	90

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB002925.002		Lead, Pb	mg/kg	1	52	50	80 - 120	103
		Nickel, Ni	mg/kg	0.5	51	50	80 - 120	101
		Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	103
		Chromium, Cr	mg/kg	0.3	50	50	80 - 120	100
		Copper, Cu	mg/kg	0.5	52	50	80 - 120	103
		Zinc, Zn	mg/kg	0.5	53	50	80 - 120	105
		Arsenic, As	mg/kg	3	52	50	80 - 120	103

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub -sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
ME200159A.00	LB002849.005		Acenaphthene	mg/kg	0.1	5.0	<0.1	5	101
7			Pyrene	mg/kg	0.1	4.9	<0.1	5	98
		Surrogates	2-fluorobiphenyl (Surrogate)	%	-	94.0	95.0	100	94
			d14-p-terphenyl (Surrogate)	%	-	108.0	105.0	100	108

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here:
http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

*	Non-accredited analysis.
-	Sample not analysed for this analyte.
^	Analysis performed by external laboratory.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⊛	Refer to Analytical Report comments for further information.

Appendix E: Current Title Information

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 11222 FOLIO 059

Security no : 124059745048J
Produced 04/04/2016 10:37 am

LAND DESCRIPTION

Lot 1 on Plan of Subdivision 546467D.
PARENT TITLE Volume 11175 Folio 939
Created by instrument AH300584Q 17/06/2010

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
YARRA RANGES SHIRE COUNCIL of 15 ANDERSON STREET LILYDALE VIC 3140
AH300619X 17/06/2010

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE PS546467D FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

DOCUMENT END

PLAN OF SUBDIVISION

Under Section 35 of the Subdivision Act 1988

STAGE NO.	LR use only	Plan Number
/	EDITION 1	PS546467D

Location of Land

Parish: YERING
Township: ——
Section: 29
Crown Allotment: 10 (PART)
Crown Portion: ——

Title Reference: Vol. 11220 Fol. 580 (Bk. 545 Mem. 317)
Vol. 11175 Fol. 939

Last Plan Reference: TP946394L (Lot 1)
TP944762T (Lot 1)

Postal Address: 15 ANDERSON STREET
(at time of subdivision) LILYDALE 3140

MGA94 Co-ordinates E 354 900
(of approx. centre of plan) N 5 819 600
ZONE: 55

Council Certification and Endorsement

Council Name: YARRA RANGES SHIRE Ref: 8912

A. This is a plan under section 35 of the Subdivision Act 1988 which does not create any additional lots.
B. This plan is exempt from Part 3 of the Subdivision Act 1988.
C. ~~This is a plan under section 35 of the Subdivision Act 1988 which creates (an) additional lot(s).~~
D. ~~It is certified under section 6 of the Subdivision Act 1988.~~
E. It is certified under section 11(7) of the Subdivision Act 1988.
F. Date of original certification under section 6. 18/06/2007
G. This is a statement of compliance under section 21 of the Subdivision Act 1988.

~~Council Delegate~~
~~Council Seal~~

~~Date /~~

Re-certified under section 11(7) of the Subdivision Act 1988.

Council Delegate
~~Council Seal~~

Date 29/06/2009 C Elliott

Vesting of Roads and / or Reserves

Roads and reserves vest in the council/body/person named when the appropriate vesting date is recorded or transfer registered. Only roads and reserves marked thus (%) vest upon registration of this plan.

Identifier	Council/Body/Person
R1 & R2	ROADS CORPORATION

All the land is to be acquired free from all encumbrances other than any easements specified on this plan.

Notations

Staging This is not a staged subdivision.
Planning Permit No: NOT APPLICABLE

Depth Limitation DOES NOT APPLY
Land to be acquired by compulsory process : NIL
Land to be acquired by agreement: R1 & R2
The land being subdivided is enclosed within thick continuous lines.
Underlined dimensions shown thus 123.45 are not the result of this survey.
Area of Lot 1 is deduced from LITHO and PS332407R.

Survey

This plan is based on survey and is compiled from Roads Corporation SP21164B
For abstract of field records see PS546466F.
This plan has been connected to permanent marks no(s) 64, 66 & 67.
In proclaimed Survey Area no. PSA 13.

Easement Information

Legend: E - Encumbering Easement or Condition in Crown Grant in the Nature of an Easement
A - Appurtenant Easement R - Encumbering Easement (Road)

Easements marked (–) are existing easements.
Easements marked (+) are created upon registration of this plan.
Easements marked (*) are created when the appropriate vesting date is recorded or transfer registered.
Easements marked (#) are removed when the appropiate vesting date is recorded or transfer registered.

Symbol	Subject Land	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
–	R1	PUBLIC HIGHWAY	SEE DIAGRAM	GOVERNMENT GAZETTE S352 20/12/2007 P. 3	THE PUBLIC
–	R2	PUBLIC HIGHWAY	SEE DIAGRAM	GOVERNMENT GAZETTE 12/3/1941 P.1248	THE PUBLIC

LR use only

Statement of Compliance/ Exemption Statement

Received ☑

Date 15/06/2010

LR use only

PLAN REGISTERED

Time 11:40 a.m.

Date 20/08/2010

B. Greenland

Assistant Registrar of Titles

Sheet 1 of 2 Sheets

ROADS CORPORATION
Land Information and Survey
60 Denmark Street,
Kew. 3101.

LICENSED SURVEYOR (PRINT) MARK BADEN RENNICK

SIGNATURE [signature] DATE 25/5/09

Job Book Number 24507

REF SP21164 PS1 VERSION 02

C Elliott

DATE 29/06/2009

COUNCIL DELEGATE SIGNATURE

Drawing file : LI&S/subactplans/24507-lis--ps-01.dgn

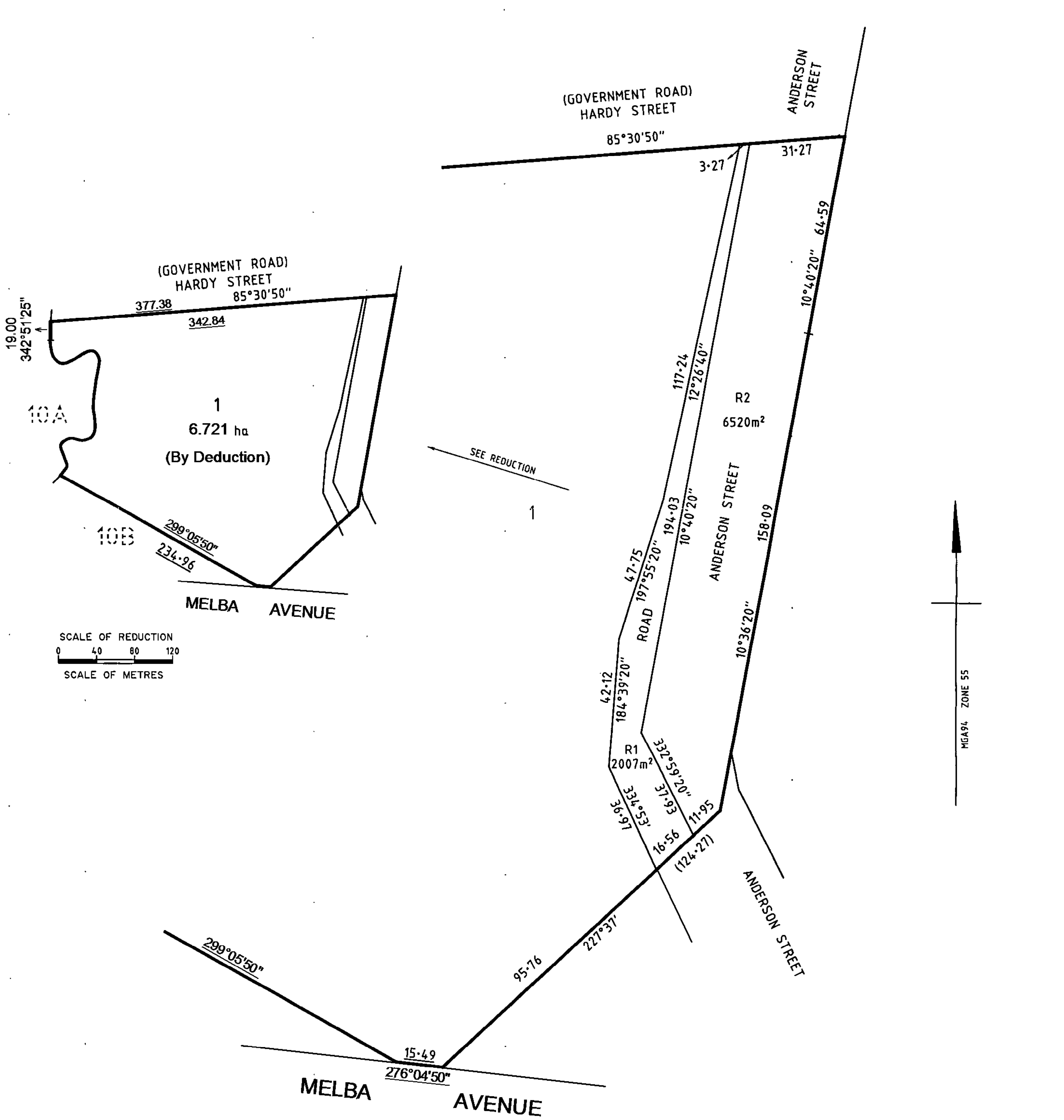
Original sheet size A3

24507-lis--ps-01.dgn

	PLAN OF SUBDIVISION Under Section 35 of the Subdivision Act 1988	STAGE NO.	LR use only EDITION	Plan Number **PS546467D**

VESTING DATES & TRANSFER REGISTRATION DATES OF ACQUIRED LAND

Land affected	Land acquired by compulsory process				Land acquired by agreement	LTO reference	Assistant Registrar of Titles
	Vesting date	Government Gazette		Date of recording of vesting date	Date of registration of transfer		Signature
		Page	Year				
R1, R2	————	————	————	————	17/06/2010	AH300584R	B.P.G.



ROADS CORPORATION Land Information and Survey 60 Denmark Street, Kew. 3101. Drawing file : LI&S/subactplans/24507-lis--ps-01.dgn	LICENSED SURVEYOR (PRINT) MARK BADEN RENNICK SIGNATURE DATE 25, 5, 09 Job Book Number 24507 REF. SP21164 PS1 VERSION 02	Sheet 2 C Elliott DATE 29/06/2008 COUNCIL DELEGATE SIGNATURE

ORIGINAL SCALE	SHEET SIZE	SCALE
1 : 1250	A3	12·5 0 12·5 25 37·5 50 LENGTHS ARE IN METRES

Original sheet size A3

24507-lis--ps-01.dgn

Appendix F: Historical Certificates of Title

Produced 04/04/2016 11:07 AM

Volume 11175 Folio 939
Folio Creation: Created as a computer folio

RECORD OF ALTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details

RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
15/06/2010	20/08/2010	PS546467D	Y

PLAN OF SUBDIVISION SECTION 35 SUBDIVISION ACT

PS546467D affect(s) land herein

17/06/2010	20/08/2010	AH300584Q	Y

Cancelled by AH300584Q

STATEMENT END

VOTS Snapshot

VOLUME 11175 FOLIO 939
124032044725F
Produced 07/12/2009 01:27 pm

LAND DESCRIPTION

Lot 1 on Title Plan 944762T.
Created by Application No. 118666J 30/11/2009

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
YARRA RANGES SHIRE COUNCIL of ANDERSON STREET LILYDALE VIC 3140
Application No. 118666J 30/11/2009

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP944762T FOR FURTHER DETAILS AND BOUNDARIES

TITLE PLAN	EDITION 1	TP944762T

LOCATION OF LAND

PARISH: YERING
TOWNSHIP:
SECTION: 29
CROWN ALLOTMENT: 10 (PART)
CROWN PORTION:
LAST PLAN REFERENCE:
DERIVED FROM:
DEPTH LIMITATION:

NOTATIONS

EASEMENT INFORMATION

E - ENCUMBERING EASEMENT. R - ENCUMBERING EASEMENT (ROAD). A - APPURTENANT EASEMENT.

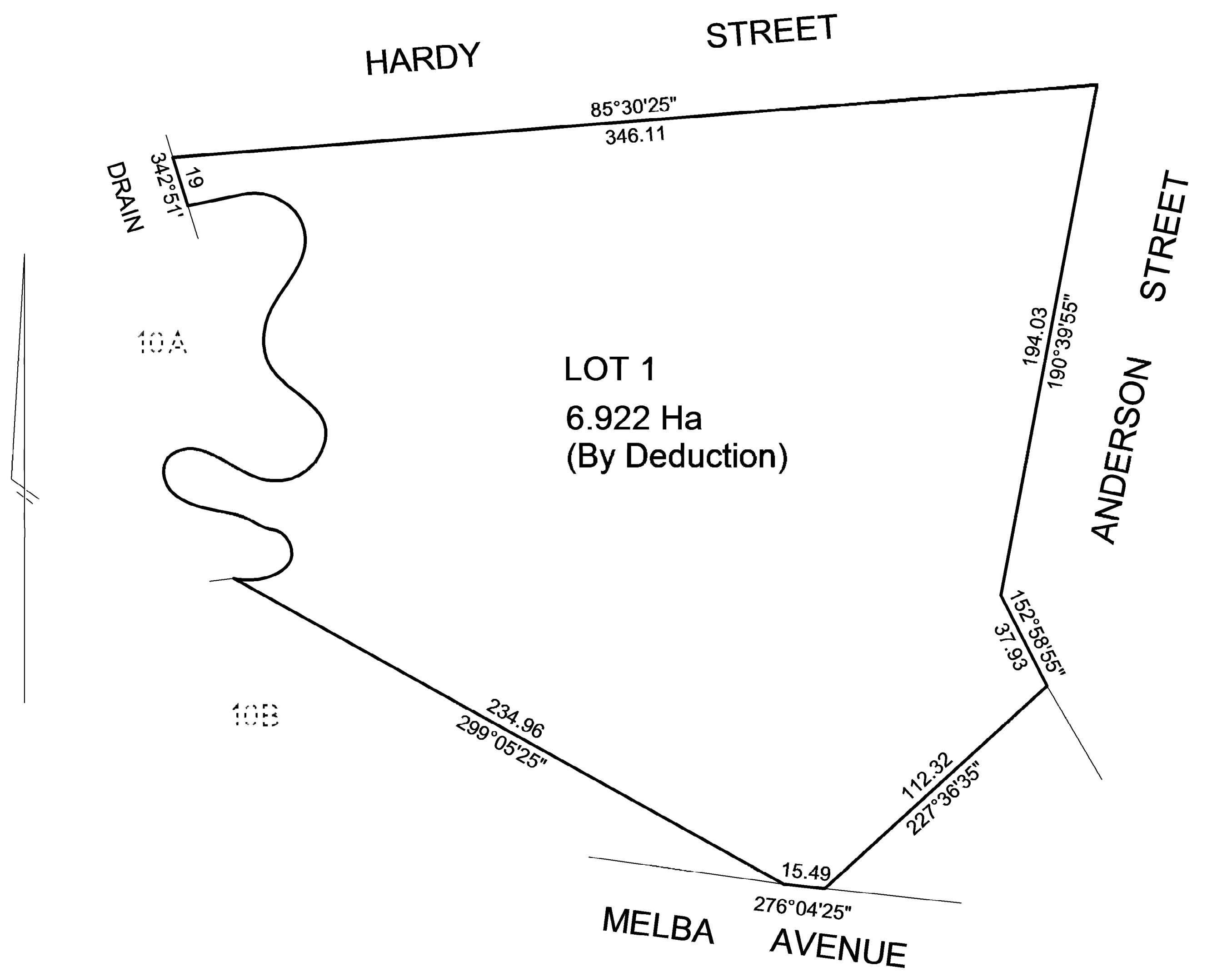
Easement Reference	Purpose / Authority	Width (Metres)	Origin	Land benefited / In favour of

THIS PLAN HAS BEEN PREPARED BY LAND VICTORIA FOR TITLE DIAGRAM PURPOSES

Checked by: PT

Date: 7/12/09

Assistant Registrar of Titles



LENGTHS ARE IN METRES	SCALE	DEALING / FILE No: AP118666J	DEALING CODE: 15
		GOVERNMENT GAZETTE No:	SHEET 1 OF 1

Appendix G: Aerial Photographs

Aerial Photographs

Aerial Photographs

Aerial Photographs

Aerial Photographs

prensa

Appendix H: Royal Historical Society of Victoria

ROYAL HISTORICAL SOCIETY OF VICTORIA INC.
239 A'Beckett Street, Melbourne 3000

Date: 23 March, 2016

Attention: Madeleine Parris

Company: Prensa Pty.Ltd.

From: Gerardine Horgan, Administrative Officer

SITE SEARCH: 15 Anderson Street, Lilydale 3140

The site under review is located south of Maroondah Highway, on the west side of Anderson St., south of Hardy Street.

The area of Lilydale was recognised as a district in 1956 and a Shire in 1872.

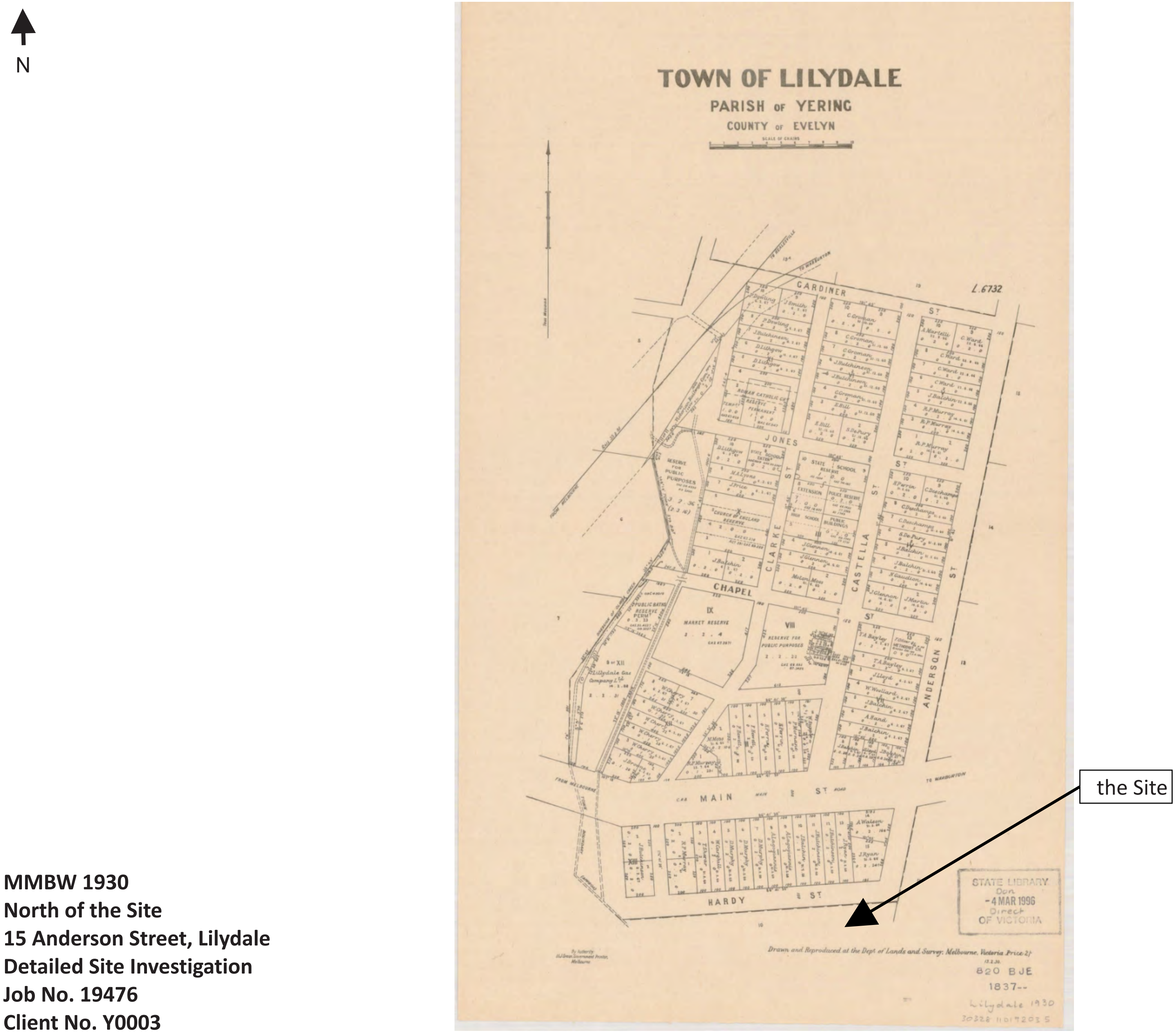
A search of the Victorian Municipal Directory of 1885 shows that it was then known as Lillydale, and was mainly a grazing and vine growing area.

The Sands and MacDougall Directories list Lilydale as a country town, and provide only alphabetical lists of residents. In the 1933 edition of S. & M. there is a Shire Hall, but the location is not mentioned.

A search of the Melways Directories showed that from 1966 to 2016, the site has been used by the Lilydale Shire Offices.

Research by Belinda Williams.

Appendix I: State Library of Victoria Search



MMBW 1930
North of the Site
15 Anderson Street, Lilydale
Detailed Site Investigation
Job No. 19476
Client No. Y0003

prensa

N

the Site


MOUNT VIEW ESTATE

LILYDALE

Saturday, 26th Feb., 1887

TERMS.

Purchasers may select any one of the following modes of payment, extending from CASH DOWN to Monthly Instalments for Eight Years. The long terms offered will give everybody an opportunity of securing an Allotment in this magnificent piece of land.

1. **£10 in Cash,** for each Allotment, and the balance by Bills at **3, 6, 9 and 12 Months,** with Interest at **6 per cent.** per annum.
2. **£10 in Cash,** for each Allotment, and for each **£100** balance of Purchase Money by Monthly Instalments, extending over **1 to 8 Years,** under the following Table:—

Term of Years.	Monthly Payments. £ s. d.	Term of Years.	Monthly Payments. £ s. d.	Term of Years.	Monthly Payments. £ s. d.	Term of Years.	Monthly Payments. £ s. d.
One - -	8 14 0	Three - -	3 2 9	Five - -	2 0 7	Seven - -	1 11 3
Two - -	4 10 6	Four - -	2 8 10	Six - -	1 15 1	Eight - -	1 8 4

3. **The Whole in Cash.**

THE FULLEST PARTICULARS MAY BE OBTAINED FROM

Messrs. C. J. & T. HAM, Auctioneers, Swanston Street, Melbourne; or Mr. E. KIDGELL, Auctioneer and Estate Agent, Lilydale.

REDUCED RAILWAY TICKETS AT 2s. 6d. RETURN, CAN BE OBTAINED FROM THE AUCTIONEERS.

Special Train leaves Princes Bridge Station at 1.10 p.m., stopping at Richmond, Hawthorn, Camberwell and Box Hill.

EASY TERMS!

SLV 1887
Mount View Estate - East of the Site
15 Anderson Street, Lilydale
Detailed Site Investigation
Job No. 19476
Client No. Y0003

Appendix J: Borelogs

Environmental Borehole Log - BH10

Sheet: 1 of 1

Client: Yarra Ranges Council	**Date:** 24/03/2016	**Depth of Hole:** 1.10 m
Job Number: 19476	**Rig/Machine:** Drill Rig	**Drawn By:** MBP
Site Location: 15 Anderson Street, Lilydale	**Excavation Method:** SSA	**Approved By:** CXB
Job Type: DSI Lilydale	**PID Calibration:** 98.9 ppm Isobutylene	

Comment:

Depth (m)	Method	Graphic Log	Subsurface Profile	Sample	PID
0.00 – 0.15	Solid auger		BITUMEN PAVEMENT (0.00 - 0.15 m).		
0.15 – 0.20	Solid auger		CRUSHED ROCK (0.15 - 0.20 m).		
0.20 – 0.45	Solid auger		FILL: Gravelly SILT (0.20 - 0.45 m). Light brown/orange, loose, dry to slightly moist, fine to coarse gravels, compacted silt.	BH10_0.3	0.5
0.45 – 0.80	Solid auger		FILL: SILT (0.45 - 0.80 m). Light brown, medium dense, dry to slightly moist, decomposed organic matter.	BH10_0.5	0.3
0.80 – 1.10	Solid auger		FILL: CLAY (0.80 - 1.10 m). Brown with orange mottles, stiff, dry to slightly moist, low to medium plasticity.	BH10_1.0	0.4
1.1			End of borehole at 1.1 m on rock.		

Environmental log only. Not to be relied on for any other purpose.

Environmental Borehole Log - BH2

Sheet: 1 of 1

Client: Yarra Ranges Council	**Date:** 23/03/2016	**Depth of Hole:** 2.00 m
Job Number: 19476	**Rig/Machine:** Drill Rig	**Drawn By:** MBP
Site Location: 15 Anderson Street, Lilydale	**Excavation Method:** SSA	**Approved By:** CXB
Job Type: DSI Lilydale	**PID Calibration:** 98.9 ppm Isobutylene	

Comment:
Quality control QC1 and QC2 collected at 0.2 m depth.

Depth (m)	Method	Graphic Log	Subsurface Profile	Sample	PID
0.0 – 0.25	Solid auger		FILL: Gravelly SILT (0.00 - 0.25 m). Brown, loose, dry, angular gravels, organic matter, minor clay inclusions.		
0.2				BH2_0.2	0.3
0.25 – 1.20			FILL: Clayey SILT (0.25 - 1.20 m). Brown/orange, stiff, loose, dry, medium plasticity, decomposed organic matter.		
0.5				BH2_0.5	0.3
1.0				BH2_1.0	0.2
1.20 – 2.00			NATURAL: CLAY (1.20 - 2.00 m). Brown/orange/grey, very stiff, dry to slightly moist, medium plasticity, minor organic matter.		
1.5				BH2_1.5	0.1
2.0				BH2_2.0	0
			End of borehole at 2.0 m on rock.		

PRENSA LIB 1.00.GLB Log PRENSA BH-TP-HA LOG 19476 DSI LILYDALE.GPJ <<DrawingFile>> 21/04/2016 14:48 8.30.002 Datgel Lab and In Situ Tool

Environmental log only. Not to be relied on for any other purpose.

Environmental Borehole Log - BH3

Sheet: 1 of 1

Client: Yarra Ranges Council	**Date:** 22/03/2016	**Depth of Hole:** 1.50 m
Job Number: 19476	**Rig/Machine:** Drill Rig	**Drawn By:** MBP
Site Location: 15 Anderson Street, Lilydale	**Excavation Method:** SSA	**Approved By:** CXB
Job Type: DSI Lilydale	**PID Calibration:** 98.9 ppm Isobutylene	

Comment:
Refusal encountered on rock fragment at approximately 0.35 m bgl. Borehole relocated approximately 0.4 m east.

Depth (m)	Method	Subsurface Profile	Sample	PID
0.00 - 0.15	Solid auger	BITUMEN PAVEMENT (0.00 - 0.15 m).		
0.15 - 0.40	Solid auger	FILL: Clayey GRAVEL (0.15 - 0.40 m). Light brown to dark grey, very loose, slightly moist, fine to medium grained sand, medium to coarse angular gravels, (road base).	BH3_0.3	0
0.40 - 0.70	Solid auger	NATURAL: Clayey SAND (0.40 - 0.70 m). Light brown, firm to stiff, loose, slightly moist, low plasticity, fine to medium grained sand.	BH3_0.5	0
0.70 - 1.20	Solid auger	NATURAL: CLAY (0.70 - 1.20 m). Light brown with orange mottles, very stiff, slightly moist, zero plasticity, trace organic rootlets, black organic matter.	BH3_0.8	0
1.20 - 1.50	Solid auger	NATURAL: Silty SAND/ROCK (1.20 - 1.50 m). Light brown, loose, slightly moist, silty sand.	BH3_1.4	0
1.5		End of borehole at 1.5 m on rock.		

Environmental log only. Not to be relied on for any other purpose.

Environmental Borehole Log - BH4

Sheet: 1 of 1

Client: Yarra Ranges Council	**Date:** 23/03/2016	**Depth of Hole:** 1.25 m
Job Number: 19476	**Rig/Machine:** Drill Rig	**Drawn By:** MBP
Site Location: 15 Anderson Street, Lilydale	**Excavation Method:** SSA	**Approved By:** CXB
Job Type: DSI Lilydale	**PID Calibration:** 98.9 ppm Isobutylene	

Comment:
Field Blank FB1 collected during sampling.

Depth (m)	Method	Graphic Log	Subsurface Profile	Sample	PID
0.1	Solid auger		BITUMENT PAVEMENT (0.00 - 0.15 m).		
0.2			FILL: Silty Sandy GRAVEL (0.15 - 0.30 m). Brown, loose, slightly moist, fine grained sand, angular gravels, bitumen fragments, crushed rock, concrete.		
0.3, 0.4			FILL: Sandy CLAY (0.30 - 0.50 m). Grey/brown, soft, moist, medium plasticity, fine grained sand, becoming natural soil.	BH4_0.33	0.7
0.5, 0.6, 0.7, 0.8, 0.9			NATURAL: CLAY (0.50 - 1.25 m). Brown, firm, slightly mosit to moist, medium plasticity, minor fine to medium gravels.	BH4_0.55	0.4
1.0			Becoming brown/grey, stiff, less gravelly.		
1.1				BH4_1.1	0.3
1.2			Becoming grey/orange/brown and slightly silty.		
			End of borehole at 1.3 m on rock.		

PRENSA LIB 1.00.GLB Log PRENSA BH-TP-HA LOG 19476 DSI LILYDALE.GPJ <<DrawingFile>> 21/04/2016 14:48 8.30.002 Datgel Lab and In Situ Tool

Environmental log only. Not to be relied on for any other purpose.

Environmental Borehole Log - BH5

Sheet: 1 of 1

prensa

Client: Yarra Ranges Council	**Date:** 24/03/2016	**Depth of Hole:** 2.00 m
Job Number: 19476	**Rig/Machine:** Drill Rig	**Drawn By:** MBP
Site Location: 15 Anderson Street, Lilydale	**Excavation Method:** SSA	**Approved By:** CXB
Job Type: DSI Lilydale	**PID Calibration:** 98.9 ppm Isobutylene	

Comment:
Insufficient sample collected at 2.0 m bgl to obtain a PID reading.

Depth (m)	Method	Graphic Log	Subsurface Profile	Sample	PID
0.0–0.15	Solid auger		BITUMEN PAVEMENT (0.00 - 0.15 m).		
0.15–0.40	Solid auger		FILL: Clayey SILT (0.15 - 0.40 m). Red/brown, soft, medium dense, slightly mosit, low plasticity, angular gravels, minor crushed rock.		
0.35				BH5_0.35	0.3
0.40–2.00	Solid auger		NATURAL: CLAY (0.40 - 2.00 m). Brown/orange, firm to stiff, slightly moist, medium to low plasticity.		
0.5				BH5_0.5	0.3
1.0			Becoming stiff, decomposed organic matter.	BH5_1.0	0.4
1.5			Becoming light brown/orange/red/grey.	BH5_1.5	0.3
2.0				BH5_2.0	
			End of borehole at 2.0 m in natural.		

Depth scale: 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0

PRENSA LIB 1.00.GLB Log PRENSA BH-TP-HA LOG 19476 DSI LILYDALE.GPJ <<DrawingFile>> 21/04/2016 14:48 8.30.002 Datgel Lab and In Situ Tool

Environmental log only. Not to be relied on for any other purpose.

Environmental Borehole Log - BH6

prensa

Sheet: 1 of 1

Client: Yarra Ranges Council	**Date:** 22/03/2016	**Depth of Hole:** 1.50 m
Job Number: 19476	**Rig/Machine:** Drill Rig	**Drawn By:** MBP
Site Location: 15 Anderson Street, Lilydale	**Excavation Method:** Hand Auger	**Approved By:** CXB
Job Type: DSI Lilydale	**PID Calibration:** 98.9 ppm Isobutylene	

Comment:

Depth (m)	Method	Graphic Log	Subsurface Profile	Sample	PID
0.1	Hand auger		FILL: Gravelly SILT (0.00 - 0.10 m). Brown, very loose, dry to slightly moist, trace fine to medium grained sand, organic matter (roots, tan bark).		
0.2			FILL: Gravelly SILT (0.10 - 0.95 m). Brown, very loose, dry to slightly moist, less organic matter, minor clay inclusions, minor brick fragments.	BH6_0.2	0.1
0.3					
0.4					
0.5				BH6_0.5	0
0.6					
0.7					
0.8			Becoming more compact silt and less gravelly.		
0.9			Decomposed organic matter.		
1.0			FILL: SILT (0.95 - 1.25 m). Light brown, medium dense, dry to slightly moist, minor roots.	BH6_1.0	0.2
1.1					
1.2					
1.3			NATURAL: CLAY (1.25 - 1.50 m). Brown/orange, stiff, slightly moist, medium plasticity.	BH6_1.3	0
1.4					
1.5			End of borehole at 1.5 m in natural.	BH6_1.5	0

Environmental log only. Not to be relied on for any other purpose.

Environmental Borehole Log - BH7

prensa

Sheet: 1 of 1

Client: Yarra Ranges Council	**Date:** 23/03/2016	**Depth of Hole:** 1.00 m
Job Number: 19476	**Rig/Machine:** Drill Rig	**Drawn By:** MBP
Site Location: 15 Anderson Street, Lilydale	**Excavation Method:** Hand Auger	**Approved By:** CXB
Job Type: DSI Lilydale	**PID Calibration:** 98.9 ppm Isobutylene	

Comment:
Rinsate R1 collected off hand auger.

Depth (m)	Method	Graphic Log	Subsurface Profile	Sample	PID
0.0 – 0.6	Hand auger		FILL: Gravelly SILT (0.00 - 0.60 m). Brown, loose, dry, fine to medium gravels, extensive organic matter (roots, tanbark).	BH7_0.2	0.4
				BH7_0.5	0.1
0.6 – 1.0			FILL: SILT (0.60 - 1.00 m). Brown, loose, dry, minor clay inclusions, organic matter (roots).	BH7_1.0	0
1.0			End of borehole at 1.0 m at target depth.		

Depth scale: 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0

Environmental log only. Not to be relied on for any other purpose.

Appendix K: EIL Calculations

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
29
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.6
Enter organic carbon content (%OC) (values from 0 to 50%)
1
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	75	80
Urban residential and open public spaces	130	230
Commercial and industrial	190	330

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
17
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.5
Enter organic carbon content (%OC) (values from 0 to 50%)
1
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	70	80
Urban residential and open public spaces	130	210
Commercial and industrial	180	310

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
29
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	40	70
Urban residential and open public spaces	130	350
Commercial and industrial	240	600

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
17
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	35	50
Urban residential and open public spaces	100	250
Commercial and industrial	180	420

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
29
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.6
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	120	260
Urban residential and open public spaces	390	990
Commercial and industrial	600	1500

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
17
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	95	190
Urban residential and open public spaces	270	660
Commercial and industrial	410	1000

Appendix L: Chain of Custody Documentation

Chain of Custody and Analysis Request

prensa

Client:	Yarra Ranges Council	**Page no.:** 1 **of:** 2	
Project Name:	DSI Lilydale	**Prensa Job Number: 19476**	
Site Address:	15 Anderson Street, Lilydale, VIC 3140	**Client number: Y0003**	
Sampled By:	MBP/CXB		

Requested Analyses:

Sample ID	Matrix	Pres.	Container	Date	Time	HOLD	NEPM 2013 Screen	TRH	VOC	pH	CEC	pHCaCl2	Sulphate	Chloride	Metals M12	PAH	OCP	OPP	Metals M13	Comments
19476_R1	Water	Ice	Vials/Amb/Met.	23/3	—			X								X			X	
19476_TB1	"	"	"	"				X												TRH C6-C9
19476_FB1	"	"	"	"		X														
19476_QC1	Soil	"	Soil Jar	"		X														
19476_QC2	"	"	"	"		X														
19476_BH6_0.2	"	"	"	22/3			X	X	X	X	X		X	X						
19476_BH6_0.5	"	"	"	"				X							X	X	X	X		
19476_BH6_1.0	"	"	"	"		X														
19476_BH6_1.3	"	"	"	"		X														
19476_BH6_1.5	"	"	"	"		X														
19476_BH3_0.3	"	"	"	"		X		X							X	X	X	X		
19476_BH3_0.5	"	"	"	"			X		X	X	X	X	X	X						
19476_BH3_0.8	"	"	"	"		X														
19476_BH3_1.4	"	"	"	"		X														
19476_BH4_0.33	"	"	"	23/3			X	X	X	X	X	X	X	X						
19476_BH4_0.55	"	"	"	"				X							X	X	X	X		
19476_BH4_1.1	"	"	"	"		X														
19476_BH7_0.2	"	"	"	"				X								X	X	X	X	
19476_BH7_0.5	"	"	"	"			X	X	X	X			X	X						
19476_BH7_1.0	"	"	"	"		X														
19476_BH2_0.2	"	"	"	"				X							X	X	X	X		

Relinquished by: MBP	**Date:** 24/3/16	**Time:**	**Analysis turnaround time:** ☐ 24 hr ☐ 48 hr ☐ 3 - 5 days ☑ Standard
Courier pick up:	**Date:**	**Time:**	
Received by: Tony W	**Date:** 24/3/16	**Time:** 6:40pm	**Method of shipment:** Delivered
Additional comments: EF/met			**Lab report number:** 494396

Please send results to: madeleine.parris@prensa.com.au
And: christie.batiste@prensa.com.au

Contact: Mel: (03) 9508 0100 Bris: (07) 3367 8944
Syd: (02) 9033 8600 admin@prensa.com.au
PO Box 2203 Wattletree Rd LPO
Malvern East VIC 3145

Chain of Custody and Analysis Request

prensa

Client:	Yarra Ranges Council
Project Name:	DSI Lilydale
Site Address:	15 Anderson Street, Lilydale, VIC 3140
Sampled By:	MBP/CXB

Page no.: 2 **of:** 2

Prensa Job Number: 19476

Client number: Y0003

Requested Analyses:

Sample ID	Matrix	Pres.	Container	Date	Time	HOLD	NEPM2013 Screen	TRH	VOC	pH	CEC	pHCaCl2	Sulphate	Chloride	Metals M12	PAH	OCP	OPP	Metals M13	Comments:
19476_BH2_0.5	Soil	Ice	Soil Jar	23/3	—			X							X	X	X	X		
19476_BH2_1.0	"	"	"	"		X														
19476_BH2_1.5	"	"	"	"		X														
19476_BH2_2.0	"	"	"	"		X														
19476_BH5_0.35	"	"	"	24/3				X								X	X	X	X	
19476_BH5_0.5	"	"	"	"		X		X							X	X	X	X		
19476_BH5_1.0	"	"	"	"		X														
19476_BH5_1.5	"	"	"	"		X														
19476_BH5_2.0	"	"	"	"		X														
19476_BH10_0.3	"	"	"	"				X								X	X	X	X	
19476_BH10 0.5	"	"	"	"				X							X	X	X	X		
19476_BH10_1.0	"	"	"	"		X														
19476_		"																		
19476_		"																		
19476_		"																		
19476_		"																		
19476_		"																		
19476_		"																		
19476_		"																		
19476_		"																		
19476_		"																		

Relinquished by: MBP	**Date:** 24/3	**Time:**
Courier pick up:	**Date:**	**Time:**
Received by: Tony	**Date:** 24/3/16	**Time:** 6:40pm

Additional comments: Ef/mat

Analysis turnround time: ☐ 24 hr ☐ 48 hr ☐ 3 - 5 days ☑ Standard

Method of shipment: Delivered

Lab report number: 494396

Please send results to: madeleine.parris@prensa.com.au And: christie.batiste@prensa.com.au

Contact: Mel: (03) 9508 0100 Bris: (07) 3367 8944
Syd: (02) 9033 8600 admin@prensa.com.au
PO Box 2203 Wattletree Rd LPO
Malvern East VIC 3145

From: Sarah Gould <SarahGould@eurofins.com>
Sent: Wednesday, 30 March 2016 9:29 AM
To: EnviroSampleVIC
Subject: FW: Eurofins | mgt Sample Receipt Advice - Report 494396 : Site DSI LILYDALE (19476)
Attachments: 494396_COC.pdf; 494396_sample_receipt_coc.pdf; 494396_summary.pdf; 3471_001.pdf

424

mA25735 /36 (14).

5553

Sarah Gould
Phone : +61 3 8564 5053
Email : SarahGould@eurofins.com

-----Original Message-----
From: Madeleine Parris [mailto:madeleine.parris@prensa.com.au]
Sent: Wednesday, 30 March 2016 9:25 AM
To: Sarah Gould
Subject: FW: Eurofins | mgt Sample Receipt Advice - Report 494396 : Site DSI LILYDALE (19476)

Hey Sarah,

Hope you had a nice Easter break!

I filled out this COC late on Thursday and have just realised I forgot to put in the analysis for the QC samples. Could you please analyse QC1 for metals (M13), TRH and PAH. Could you also please send QC2 to envirolabs (with the envirolabs COC I have attached).

Many thanks :)

Maddie

Madeleine Parris| HSE Consultant | Prensa Pty Ltd

Office: 261-271 Wattletree Rd, Malvern VIC 3144 Postal Address: PO Box 2203, Wattletree Rd LPO, East Malvern VIC 3145
Phone: (03) 9508 0100 | Mobile: 0431 414 148
Email: madeleine.parris@prensa.com.au | Web: www.prensa.com.au

property > environment > safety >

PRIVILEGED - PRIVATE AND CONFIDENTIAL

SEND TO ENVIROLABS

Chain of Custody and Analysis Request

prensa

Client: Yarra Ranges Council
Project Name: OSI Lilydale
Site Address: 15 Anderson St, Lilydale, VIC 3140
Sampled By: MBP.

Page no.: 1 of: 1
Prensa Job Number: 19476
Client number: Y0003

	Sample ID	Matrix	Pres.	Container	Date	Time	Metals M13	TRH	PAH	Comments
1	19476_QC2	Soil	Ice	Soil Jar	28/3	–	X	X	X	

Envirolab Services
1a Dalmore Drive
Caribbean Park
~~Scoresby~~ VIC 3179
Ph: (03) 9763 2500
Job No: 8189
Date Received: 30/3/16
Time Received: 13:00
Received by: MS
Temp: Cool/Ambient 3.3°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by:	Date:	Time:
Courier pick up:	Date:	Time:
Received by: M.SAAD	Date: 30/3/16	Time: 13:00

Additional comments:

Analysis turnaround time: ☐ 24 hr ☐ 48 hr ☐ 3 - 5 days ☑ Standard

Method of shipment:

Lab report number:

Please send results to: madeleine.parris@prensa.com.au
And: christie.batiste@prensa.com.au

Contact: Mel: (03) 9508 0100 Bris: (07) 3367 8944
Syd: (02) 9033 8600 admin@prensa.com.au
PO Box 2203 Wattletree Rd LPO
Malvern East VIC 3145

Authorised By: CBH Issue Date: 23/10/2012 Version: 4
PRCON3012 Chain of Custody (V4)

CONTROLLED DOCUMENT
This Document is Uncontrolled if Printed

Appendix M: NATA Accredited Analytical Results

Sample Receipt Advice

Company name:	**Prensa VIC**
Contact name:	Madeleine Parris
Project name:	DSI LILYDALE
Project ID:	19476
COC number:	Y0003
Turn around time:	5 Day
Date/Time received:	Mar 24, 2016 6:39 PM
Eurofins | mgt reference:	**494396**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Samples BH3_0.3 & BH5_0.5 ticked for both analysis & hold. Samples logged in for testing.

Contact notes

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

Sarah Gould on Phone : (+61) (8) 8154 3100 or by e.mail: SarahGould@eurofins.com

Results will be delivered electronically via e.mail to Madeleine Parris - madeleine.parris@prensa.com.au.

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

Sydney
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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

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

Company Name:	Prensa VIC	**Order No.:**		**Received:** Mar 24, 2016 6:39 PM
Address:	261-271 Wattletree Rd Malvern VIC 3144	**Report #:**	494396	**Due:** Apr 5, 2016
		Phone:	9508 0100	**Priority:** 5 Day
		Fax:		**Contact Name:** Madeleine Parris
Project Name:	DSI LILYDALE			
Project ID:	19476			

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																
19476_R1	Mar 23, 2016		Water	M16-Ma25718							X				X					X
19476_TB1	Mar 23, 2016		Water	M16-Ma25719						X										
19476_FB1	Mar 23, 2016		Water	M16-Ma25720		X														
19476_BH6_0.2	Mar 22, 2016		Soil	M16-Ma25721	X		X		X							X	X	X	X	X
19476_BH6_0.5	Mar 22, 2016		Soil	M16-Ma25722							X	X	X	X			X			X
19476_BH3_0.3	Mar 22, 2016		Soil	M16-Ma25723							X	X	X	X			X			X
19476_BH3_0.	Mar 22, 2016		Soil	M16-Ma25724	X		X	X	X							X	X	X	X	X

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Eurofins | mgt Client Manager: Sarah Gould

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Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
5																				
19476_BH4_0.33	Mar 23, 2016		Soil	M16-Ma25725	X		X	X	X							X	X	X	X	X
19476_BH4_0.55	Mar 23, 2016		Soil	M16-Ma25726							X	X	X	X			X			X
19476_BH7_0.2	Mar 23, 2016		Soil	M16-Ma25727							X	X	X		X		X			X
19476_BH7_0.5	Mar 23, 2016		Soil	M16-Ma25728	X		X		X							X	X		X	X
19476_BH2_0.2	Mar 23, 2016		Soil	M16-Ma25729							X	X	X	X			X			X
19476_BH2_0.	Mar 23, 2016		Soil	M16-Ma25730							X	X	X	X			X			X

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NATA # 1261 Site # 20794

Company Name: Prensa VIC
Address: 261-271 Wattletree Rd
Malvern
VIC 3144

Project Name: DSI LILYDALE
Project ID: 19476

Order No.:
Report #: 494396
Phone: 9508 0100
Fax:

Received: Mar 24, 2016 6:39 PM
Due: Apr 5, 2016
Priority: 5 Day
Contact Name: Madeleine Parris

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
5																				
19476_BH5_0.35	Mar 24, 2016		Soil	M16-Ma25731							X	X	X		X		X			X
19476_BH5_0.5	Mar 24, 2016		Soil	M16-Ma25732							X	X	X	X			X			X
19476_BH10_0.3	Mar 24, 2016		Soil	M16-Ma25733							X	X	X		X		X			X
19476_BH10_0.5	Mar 24, 2016		Soil	M16-Ma25734							X	X	X	X			X			X
19476_QC1	Mar 23, 2016		Soil	M16-Ma25735		X														
19476_QC2	Mar 23, 2016		Soil	M16-Ma25736		X														
19476_BH6_1.	Mar 22, 2016		Soil	M16-Ma25737		X														

Company Name: Prensa VIC
Address: 261-271 Wattletree Rd
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VIC 3144

Project Name: DSI LILYDALE
Project ID: 19476

Order No.:
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Phone: 9508 0100
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Received: Mar 24, 2016 6:39 PM
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Contact Name: Madeleine Parris

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH6_1.3	Mar 22, 2016		Soil	M16-Ma25738		X														
19476_BH6_1.5	Mar 22, 2016		Soil	M16-Ma25739		X														
19476_BH3_0.8	Mar 22, 2016		Soil	M16-Ma25740		X														
19476_BH3_1.4	Mar 22, 2016		Soil	M16-Ma25741		X														
19476_BH4_1.1	Mar 23, 2016		Soil	M16-Ma25742		X														
19476_BH7_1.	Mar 23, 2016		Soil	M16-Ma25743		X														

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Company Name:	Prensa VIC	**Order No.:**		**Received:**	Mar 24, 2016 6:39 PM
Address:	261-271 Wattletree Rd Malvern VIC 3144	**Report #:**	494396	**Due:**	Apr 5, 2016
		Phone:	9508 0100	**Priority:**	5 Day
		Fax:		**Contact Name:**	Madeleine Parris
Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH2_1.0	Mar 23, 2016		Soil	M16-Ma25744		X														
19476_BH2_1.5	Mar 23, 2016		Soil	M16-Ma25745		X														
19476_BH2_2.0	Mar 23, 2016		Soil	M16-Ma25746		X														
19476_BH5_1.0	Mar 24, 2016		Soil	M16-Ma25747		X														
19476_BH5_1.5	Mar 24, 2016		Soil	M16-Ma25748		X														
19476_BH5_2.	Mar 24, 2016		Soil	M16-Ma25749		X														

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Address:	261-271 Wattletree Rd Malvern VIC 3144	**Report #:**	494396	**Due:**	Apr 5, 2016
		Phone:	9508 0100	**Priority:**	5 Day
		Fax:		**Contact Name:**	Madeleine Parris
Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH10_1.0	Mar 24, 2016		Soil	M16-Ma25750		X														

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Prensa VIC
261-271 Wattletree Rd
Malvern
VIC 3144

Attention: **Madeleine Parris**

Report **494396-S**
Project name DSI LILYDALE
Project ID 19476
Received Date Mar 24, 2016

Client Sample ID			**19476_BH6_0.2**	**19476_BH6_0.5**	**19476_BH3_0.3**	**19476_BH3_0.5**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25721**	**M16-Ma25722**	**M16-Ma25723**	**M16-Ma25724**
Date Sampled			**Mar 22, 2016**	**Mar 22, 2016**	**Mar 22, 2016**	**Mar 22, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	120	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	120	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	240	< 50	< 50	< 50
Volatile Organics						
1.1-Dichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1-Dichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.1-Trichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.1.2-Tetrachloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.2-Trichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.2.2-Tetrachloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dibromoethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dichlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dichloropropane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2.3-Trichloropropane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2.4-Trimethylbenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.3-Dichlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.3-Dichloropropane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.3.5-Trimethylbenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.4-Dichlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
2-Butanone (MEK)	0.05	mg/kg	< 0.05	-	-	< 0.05
2-Propanone (Acetone)	0.05	mg/kg	< 0.05	-	-	< 0.05
4-Chlorotoluene	0.05	mg/kg	< 0.05	-	-	< 0.05
4-Methyl-2-pentanone (MIBK)	0.05	mg/kg	< 0.05	-	-	< 0.05
Allyl chloride	0.05	mg/kg	< 0.05	-	-	< 0.05
Benzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Bromobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromochloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromodichloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromoform	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromomethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Carbon disulfide	0.05	mg/kg	< 0.05	-	-	< 0.05
Carbon Tetrachloride	0.05	mg/kg	< 0.05	-	-	< 0.05

Client Sample ID			19476_BH6_0.2	19476_BH6_0.5	19476_BH3_0.3	19476_BH3_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Ma25721	M16-Ma25722	M16-Ma25723	M16-Ma25724
Date Sampled			Mar 22, 2016	Mar 22, 2016	Mar 22, 2016	Mar 22, 2016
Test/Reference	LOR	Unit				
Volatile Organics						
Chlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Chloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Chloroform	0.05	mg/kg	< 0.05	-	-	< 0.05
Chloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
cis-1.2-Dichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
cis-1.3-Dichloropropene	0.05	mg/kg	< 0.05	-	-	< 0.05
Dibromochloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Dibromomethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Dichlorodifluoromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Iodomethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Isopropyl benzene (Cumene)	0.05	mg/kg	< 0.05	-	-	< 0.05
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	< 0.2
Methylene Chloride	0.05	mg/kg	< 0.05	-	-	< 0.05
o-Xylene	0.1	mg/kg	< 0.1	-	-	< 0.1
Styrene	0.05	mg/kg	< 0.05	-	-	< 0.05
Tetrachloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
Toluene	0.1	mg/kg	< 0.1	-	-	< 0.1
trans-1.2-Dichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
trans-1.3-Dichloropropene	0.05	mg/kg	< 0.05	-	-	< 0.05
Trichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
Trichlorofluoromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Vinyl chloride	0.05	mg/kg	< 0.05	-	-	< 0.05
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	< 0.3
Fluorobenzene (surr.)	1	%	61	-	-	63
4-Bromofluorobenzene (surr.)	1	%	67	-	-	72
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

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Client Sample ID			19476_BH6_0.2	19476_BH6_0.5	19476_BH3_0.3	19476_BH3_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25721**	**M16-Ma25722**	**M16-Ma25723**	**M16-Ma25724**
Date Sampled			**Mar 22, 2016**	**Mar 22, 2016**	**Mar 22, 2016**	**Mar 22, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	130	105	97	58
p-Terphenyl-d14 (surr.)	1	%	133	98	96	87
Organochlorine Pesticides						
Bifenthrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Chlordanes - Total	0.1	mg/kg	-	< 0.1	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	< 0.05	-
a-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
b-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
d-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	-	< 0.05	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	-
Methoxychlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Toxaphene	1	mg/kg	-	< 1	< 1	-
Dibutylchlorendate (surr.)	1	%	-	100	100	-
Tetrachloro-m-xylene (surr.)	1	%	-	125	104	-
Organophosphorous Pesticides						
Bolstar	0.2	mg/kg	-	< 0.2	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	-	< 0.2
Chlorpyrifos	0.2	mg/kg	-	< 0.2	< 0.2	-
Demeton-O	0.2	mg/kg	-	< 0.2	< 0.2	-
Diazinon	0.2	mg/kg	-	< 0.2	< 0.2	-
Dichlorvos	0.2	mg/kg	-	< 0.2	< 0.2	-
Disulfoton	0.2	mg/kg	-	< 0.2	< 0.2	-
Ethion	0.2	mg/kg	-	< 0.2	< 0.2	-
Ethoprop	0.2	mg/kg	-	< 0.2	< 0.2	-
Fenitrothion	0.2	mg/kg	-	< 0.2	< 0.2	-
Fensulfothion	0.2	mg/kg	-	< 0.2	< 0.2	-
Fenthion	0.2	mg/kg	-	< 0.2	< 0.2	-
Merphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Methyl azinphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Methyl parathion	0.2	mg/kg	-	< 0.2	< 0.2	-
Mevinphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Naled	0.5	mg/kg	-	< 0.5	< 0.5	-
Phorate	0.2	mg/kg	-	< 0.2	< 0.2	-

Client Sample ID			19476_BH6_0.2	19476_BH6_0.5	19476_BH3_0.3	19476_BH3_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Ma25721	M16-Ma25722	M16-Ma25723	M16-Ma25724
Date Sampled			Mar 22, 2016	Mar 22, 2016	Mar 22, 2016	Mar 22, 2016
Test/Reference	LOR	Unit				
Organophosphorous Pesticides						
Ronnel	0.2	mg/kg	-	< 0.2	< 0.2	-
Tokuthion	0.2	mg/kg	-	< 0.2	< 0.2	-
Trichloronate	0.2	mg/kg	-	< 0.2	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	90	90	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	101	-	-	91
Tetrachloro-m-xylene (surr.)	1	%	129	-	-	111
Triazines						
Atrazine	0.2	mg/kg	< 0.2	-	-	< 0.2
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	170	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
NEPM 2013 Acid Herbicides						
Picloram*	0.5	mg/kg	< 0.5	-	-	< 0.5
2.4-D	0.5	mg/kg	< 0.5	-	-	< 0.5
2.4.5-T	0.5	mg/kg	< 0.5	-	-	< 0.5
MCPA	0.5	mg/kg	< 0.5	-	-	< 0.5
MCPB	0.5	mg/kg	< 0.5	-	-	< 0.5
Mecoprop	0.5	mg/kg	< 0.5	-	-	< 0.5
Warfarin (surr.)	1	%	84	-	-	85
NEPM 2013 Organochlorine Pesticides						
Comments			G01			
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	< 0.05
Mirex	0.01	mg/kg	< 0.05	-	-	< 0.01
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.5	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
Dieldrin	0.05	mg/kg	0.53	-	-	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Toxaphene	1	mg/kg	< 1	-	-	< 1
Dibutylchlorendate (surr.)	1	%	101	-	-	91
Tetrachloro-m-xylene (surr.)	1	%	129	-	-	111

Client Sample ID			19476_BH6_0.2	19476_BH6_0.5	19476_BH3_0.3	19476_BH3_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25721**	**M16-Ma25722**	**M16-Ma25723**	**M16-Ma25724**
Date Sampled			**Mar 22, 2016**	**Mar 22, 2016**	**Mar 22, 2016**	**Mar 22, 2016**
Test/Reference	LOR	Unit				
NEPM 2013 Phenols						
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	< 0.4
Pentachlorophenol	1.0	mg/kg	< 1	-	-	< 1
Phenol	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenol-d6 (surr.)	1	%	114	-	-	47
Chloride	5	mg/kg	180	-	-	90
Chromium (hexavalent)	1	mg/kg	< 1	-	-	< 1
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	190	-	-	120
Cyanide (free)	5	mg/kg	< 5	-	-	< 5
pH (1:5 Aqueous extract)	0.1	pH Units	6.7	-	-	8.0
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	-	-	-	7.5
Sulphate (as S)	10	mg/kg	< 10	-	-	12
% Moisture	1	%	15	12	4.5	15
Heavy Metals						
Arsenic	2	mg/kg	8.4	8.9	17	12
Beryllium	2	mg/kg	< 2	-	-	< 2
Boron	10	mg/kg	< 10	-	-	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	32	< 5	-
Cobalt	5	mg/kg	6.1	-	-	< 5
Copper	5	mg/kg	20	13	< 5	5.9
Lead	5	mg/kg	28	27	< 5	16
Manganese	5	mg/kg	220	-	-	92
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	10	mg/kg	-	< 10	< 10	-
Nickel	5	mg/kg	16	11	< 5	12
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	5	mg/kg	-	< 5	< 5	-
Tin	10	mg/kg	-	< 10	< 10	-
Zinc	5	mg/kg	170	75	15	13
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	26	-	-	17

Client Sample ID			19476_BH4_0.33	19476_BH4_0.55	19476_BH7_0.2	19476_BH7_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25725**	**M16-Ma25726**	**M16-Ma25727**	**M16-Ma25728**
Date Sampled			**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	57	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	57	< 50

Client Sample ID			19476_BH4_0.33	19476_BH4_0.55	19476_BH7_0.2	19476_BH7_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25725**	**M16-Ma25726**	**M16-Ma25727**	**M16-Ma25728**
Date Sampled			**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit				
Volatile Organics						
1.1-Dichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1-Dichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.1-Trichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.1.2-Tetrachloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.2-Trichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.1.2.2-Tetrachloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dibromoethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dichlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dichloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2-Dichloropropane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2.3-Trichloropropane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.2.4-Trimethylbenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.3-Dichlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.3-Dichloropropane	0.05	mg/kg	< 0.05	-	-	< 0.05
1.3.5-Trimethylbenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
1.4-Dichlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
2-Butanone (MEK)	0.05	mg/kg	< 0.05	-	-	< 0.05
2-Propanone (Acetone)	0.05	mg/kg	< 0.05	-	-	< 0.05
4-Chlorotoluene	0.05	mg/kg	< 0.05	-	-	< 0.05
4-Methyl-2-pentanone (MIBK)	0.05	mg/kg	< 0.05	-	-	< 0.05
Allyl chloride	0.05	mg/kg	< 0.05	-	-	< 0.05
Benzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Bromobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromochloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromodichloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromoform	0.05	mg/kg	< 0.05	-	-	< 0.05
Bromomethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Carbon disulfide	0.05	mg/kg	< 0.05	-	-	< 0.05
Carbon Tetrachloride	0.05	mg/kg	< 0.05	-	-	< 0.05
Chlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Chloroethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Chloroform	0.05	mg/kg	< 0.05	-	-	< 0.05
Chloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
cis-1.2-Dichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
cis-1.3-Dichloropropene	0.05	mg/kg	< 0.05	-	-	< 0.05
Dibromochloromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Dibromomethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Dichlorodifluoromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Iodomethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Isopropyl benzene (Cumene)	0.05	mg/kg	< 0.05	-	-	< 0.05
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	< 0.2
Methylene Chloride	0.05	mg/kg	< 0.05	-	-	< 0.05
o-Xylene	0.1	mg/kg	< 0.1	-	-	< 0.1
Styrene	0.05	mg/kg	< 0.05	-	-	< 0.05
Tetrachloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
Toluene	0.1	mg/kg	< 0.1	-	-	< 0.1
trans-1.2-Dichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
trans-1.3-Dichloropropene	0.05	mg/kg	< 0.05	-	-	< 0.05

Client Sample ID			19476_BH4_0.33	19476_BH4_0.55	19476_BH7_0.2	19476_BH7_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Ma25725	M16-Ma25726	M16-Ma25727	M16-Ma25728
Date Sampled			Mar 23, 2016	Mar 23, 2016	Mar 23, 2016	Mar 23, 2016
Test/Reference	LOR	Unit				
Volatile Organics						
Trichloroethene	0.05	mg/kg	< 0.05	-	-	< 0.05
Trichlorofluoromethane	0.05	mg/kg	< 0.05	-	-	< 0.05
Vinyl chloride	0.05	mg/kg	< 0.05	-	-	< 0.05
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	< 0.3
Fluorobenzene (surr.)	1	%	54	-	-	57
4-Bromofluorobenzene (surr.)	1	%	62	-	-	66
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	84	77	64	90
p-Terphenyl-d14 (surr.)	1	%	106	98	82	110
Organochlorine Pesticides						
Bifenthrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Chlordanes - Total	0.1	mg/kg	-	< 0.1	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	< 0.05	-
a-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
b-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
d-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	-	< 0.05	< 0.05	-

Client Sample ID			19476_BH4_0.33	19476_BH4_0.55	19476_BH7_0.2	19476_BH7_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25725**	**M16-Ma25726**	**M16-Ma25727**	**M16-Ma25728**
Date Sampled			**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endrin aldehyde	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	-	< 0.05	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	-
Methoxychlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Toxaphene	1	mg/kg	-	< 1	< 1	-
Dibutylchlorendate (surr.)	1	%	-	135	137	-
Tetrachloro-m-xylene (surr.)	1	%	-	112	83	-
Organophosphorous Pesticides						
Bolstar	0.2	mg/kg	-	< 0.2	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	-	< 0.2
Chlorpyrifos	0.2	mg/kg	-	< 0.2	< 0.2	-
Demeton-O	0.2	mg/kg	-	< 0.2	< 0.2	-
Diazinon	0.2	mg/kg	-	< 0.2	< 0.2	-
Dichlorvos	0.2	mg/kg	-	< 0.2	< 0.2	-
Disulfoton	0.2	mg/kg	-	< 0.2	< 0.2	-
Ethion	0.2	mg/kg	-	< 0.2	< 0.2	-
Ethoprop	0.2	mg/kg	-	< 0.2	< 0.2	-
Fenitrothion	0.2	mg/kg	-	< 0.2	< 0.2	-
Fensulfothion	0.2	mg/kg	-	< 0.2	< 0.2	-
Fenthion	0.2	mg/kg	-	< 0.2	< 0.2	-
Merphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Methyl azinphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Methyl parathion	0.2	mg/kg	-	< 0.2	< 0.2	-
Mevinphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Naled	0.5	mg/kg	-	< 0.5	< 0.5	-
Phorate	0.2	mg/kg	-	< 0.2	< 0.2	-
Ronnel	0.2	mg/kg	-	< 0.2	< 0.2	-
Tokuthion	0.2	mg/kg	-	< 0.2	< 0.2	-
Trichloronate	0.2	mg/kg	-	< 0.2	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	73	68	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	86	-	-	76
Tetrachloro-m-xylene (surr.)	1	%	111	-	-	95
Triazines						
Atrazine	0.2	mg/kg	< 0.2	-	-	< 0.2

Client Sample ID			19476_BH4_0.33	19476_BH4_0.55	19476_BH7_0.2	19476_BH7_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25725**	**M16-Ma25726**	**M16-Ma25727**	**M16-Ma25728**
Date Sampled			**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
NEPM 2013 Acid Herbicides						
Picloram*	0.5	mg/kg	< 0.5	-	-	< 0.5
2.4-D	0.5	mg/kg	< 0.5	-	-	< 0.5
2.4.5-T	0.5	mg/kg	< 0.5	-	-	< 0.5
MCPA	0.5	mg/kg	< 0.5	-	-	< 0.5
MCPB	0.5	mg/kg	< 0.5	-	-	< 0.5
Mecoprop	0.5	mg/kg	< 0.5	-	-	< 0.5
Warfarin (surr.)	1	%	91	-	-	89
NEPM 2013 Organochlorine Pesticides						
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	< 0.05
Mirex	0.01	mg/kg	< 0.01	-	-	< 0.01
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
Dieldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Toxaphene	1	mg/kg	< 1	-	-	< 1
Dibutylchlorendate (surr.)	1	%	86	-	-	76
Tetrachloro-m-xylene (surr.)	1	%	111	-	-	95
NEPM 2013 Phenols						
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	< 0.4
Pentachlorophenol	1.0	mg/kg	< 1	-	-	< 1
Phenol	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenol-d6 (surr.)	1	%	69	-	-	82
Chloride	5	mg/kg	17	-	-	100
Chromium (hexavalent)	1	mg/kg	< 1	-	< 1	< 1
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	160	-	-	-
Cyanide (free)	5	mg/kg	< 5	-	-	< 5
pH (1:5 Aqueous extract)	0.1	pH Units	8.4	-	-	7.9
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	7.6	-	-	-
Sulphate (as S)	10	mg/kg	13	-	-	15
% Moisture	1	%	14	27	5.5	15

Client Sample ID			19476_BH4_0.33	19476_BH4_0.55	19476_BH7_0.2	19476_BH7_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Ma25725	M16-Ma25726	M16-Ma25727	M16-Ma25728
Date Sampled			Mar 23, 2016	Mar 23, 2016	Mar 23, 2016	Mar 23, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	13	17	6.4	7.3
Beryllium	2	mg/kg	< 2	-	< 2	< 2
Boron	10	mg/kg	< 10	-	< 10	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	24	-	-
Cobalt	5	mg/kg	18	-	< 5	< 5
Copper	5	mg/kg	38	< 5	7.8	< 5
Lead	5	mg/kg	12	15	7.7	16
Manganese	5	mg/kg	640	-	53	17
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	10	mg/kg	-	< 10	-	-
Nickel	5	mg/kg	57	5.7	8.4	< 5
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	5	mg/kg	-	< 5	-	-
Tin	10	mg/kg	-	< 10	-	-
Zinc	5	mg/kg	39	10	24	< 5
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	29	-	-	-

Client Sample ID			19476_BH2_0.2	19476_BH2_0.5	19476_BH5_0.35	19476_BH5_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Ma25729	M16-Ma25730	M16-Ma25731	M16-Ma25732
Date Sampled			Mar 23, 2016	Mar 23, 2016	Mar 24, 2016	Mar 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			19476_BH2_0.2	19476_BH2_0.5	19476_BH5_0.35	19476_BH5_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25729**	**M16-Ma25730**	**M16-Ma25731**	**M16-Ma25732**
Date Sampled			**Mar 23, 2016**	**Mar 23, 2016**	**Mar 24, 2016**	**Mar 24, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	104	93	103	93
p-Terphenyl-d14 (surr.)	1	%	98	89	97	89
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	82	78	128	95
Tetrachloro-m-xylene (surr.)	1	%	91	76	74	102
Organophosphorous Pesticides						
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl azinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			19476_BH2_0.2	19476_BH2_0.5	19476_BH5_0.35	19476_BH5_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Ma25729	M16-Ma25730	M16-Ma25731	M16-Ma25732
Date Sampled			Mar 23, 2016	Mar 23, 2016	Mar 24, 2016	Mar 24, 2016
Test/Reference	LOR	Unit				
Organophosphorous Pesticides						
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Naled	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	62	58	63	57
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Chromium (hexavalent)	1	mg/kg	-	-	< 1	-
% Moisture	1	%	8.8	10	11	24
Heavy Metals						
Arsenic	2	mg/kg	8.5	7.3	6.3	8.5
Beryllium	2	mg/kg	-	-	< 2	-
Boron	10	mg/kg	-	-	< 10	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.7	17	-	17
Cobalt	5	mg/kg	-	-	< 5	-
Copper	5	mg/kg	5.6	7.7	< 5	< 5
Lead	5	mg/kg	29	9.3	7.5	16
Manganese	5	mg/kg	-	-	21	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	10	mg/kg	< 10	< 10	-	< 10
Nickel	5	mg/kg	7.5	9.0	9.4	< 5
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	5	mg/kg	< 5	< 5	-	< 5
Tin	10	mg/kg	< 10	< 10	-	< 10
Zinc	5	mg/kg	27	20	10.0	< 5

Client Sample ID			19476_BH10_0.3	19476_BH10_0.5	19476_QC1
Sample Matrix			Soil	Soil	Soil
Eurofins | mgt Sample No.			M16-Ma25733	M16-Ma25734	M16-Ma25735
Date Sampled			Mar 24, 2016	Mar 24, 2016	Mar 23, 2016
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50

Client Sample ID			19476_BH10_0.3	19476_BH10_0.5	19476_QC1
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25733**	**M16-Ma25734**	**M16-Ma25735**
Date Sampled			**Mar 24, 2016**	**Mar 24, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	101	100	87
p-Terphenyl-d14 (surr.)	1	%	96	94	90
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	-
Toxaphene	1	mg/kg	< 1	< 1	-

Client Sample ID			19476_BH10_0.3	19476_BH10_0.5	19476_QC1
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Ma25733**	**M16-Ma25734**	**M16-Ma25735**
Date Sampled			**Mar 24, 2016**	**Mar 24, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit			
Organochlorine Pesticides					
Dibutylchlorendate (surr.)	1	%	138	132	-
Tetrachloro-m-xylene (surr.)	1	%	91	74	-
Organophosphorous Pesticides					
Bolstar	0.2	mg/kg	< 0.2	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	-
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	-
Diazinon	0.2	mg/kg	< 0.2	< 0.2	-
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	-
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	-
Ethion	0.2	mg/kg	< 0.2	< 0.2	-
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	-
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	-
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	-
Fenthion	0.2	mg/kg	< 0.2	< 0.2	-
Merphos	0.2	mg/kg	< 0.2	< 0.2	-
Methyl azinphos	0.2	mg/kg	< 0.2	< 0.2	-
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	-
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	-
Naled	0.5	mg/kg	< 0.5	< 0.5	-
Phorate	0.2	mg/kg	< 0.2	< 0.2	-
Ronnel	0.2	mg/kg	< 0.2	< 0.2	-
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	-
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	-
Triphenylphosphate (surr.)	1	%	61	60	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100
Chromium (hexavalent)	1	mg/kg	< 1	-	< 1
% Moisture	1	%	8.2	8.4	11
Heavy Metals					
Arsenic	2	mg/kg	13	5.3	8.6
Beryllium	2	mg/kg	< 2	-	< 2
Boron	10	mg/kg	< 10	-	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	7.0	-
Cobalt	5	mg/kg	23	-	< 5
Copper	5	mg/kg	57	< 5	6.5
Lead	5	mg/kg	11	13	35
Manganese	5	mg/kg	960	-	100
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Molybdenum	10	mg/kg	-	< 10	-
Nickel	5	mg/kg	100	< 5	8.4
Selenium	2	mg/kg	< 2	< 2	< 2
Silver	5	mg/kg	-	< 5	-
Tin	10	mg/kg	-	< 10	-
Zinc	5	mg/kg	58	6.5	32

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Mar 31, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 30, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 31, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Volatile Organics	Melbourne	Mar 29, 2016	7 Day
- Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS			
Organochlorine Pesticides	Melbourne	Mar 29, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Organophosphorous Pesticides	Melbourne	Mar 31, 2016	14 Day
- Method: USEPA 8270 Organophosphorus Pesticides			
Chloride	Melbourne	Mar 29, 2016	28 Day
- Method: MGT 1100A			
pH (1:5 Aqueous extract)	Melbourne	Mar 30, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
pH (units)(1:5 soil:CaCl2 extract)	Melbourne	Mar 30, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as S)	Melbourne	Mar 29, 2016	28 Day
- Method: In house MGT1110A (SO4 by Discrete Analyser)			
IWRG 621 Metals : Metals M12	Melbourne	Mar 29, 2016	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding Methyl Mercury/PBDE			
Polycyclic Aromatic Hydrocarbons	Melbourne	Mar 31, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Polychlorinated Biphenyls	Melbourne	Mar 29, 2016	28 Day
- Method: USEPA 8082 Polychlorinated Biphenyls			
Triazines	Melbourne	Mar 31, 2016	14 Day
- Method: USEPA 8270			
NEPM 2013 Acid Herbicides	Melbourne	Mar 30, 2016	14 Day
- Method: MGT 530			
NEPM 2013 Organochlorine Pesticides	Melbourne	Mar 29, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
NEPM 2013 Phenols	Melbourne	Mar 31, 2016	14 Day
- Method: USEPA 8270 Phenols			
Chromium (hexavalent)	Melbourne	Mar 30, 2016	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
NEPM 2013 Metals : Metals M12	Melbourne	Mar 29, 2016	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Conductivity (1:5 aqueous extract at 25°C)	Melbourne	Mar 30, 2016	7 Day
- Method: LTM-INO-4030			
Ion Exchange Properties	Melbourne	Mar 31, 2016	
% Moisture	Melbourne	Mar 30, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			
Heavy Metals	Melbourne	Mar 30, 2016	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			

Company Name:	Prensa VIC	**Order No.:**		**Received:**	Mar 24, 2016 6:39 PM
Address:	261-271 Wattletree Rd Malvern VIC 3144	**Report #:**	494396	**Due:**	Apr 5, 2016
		Phone:	9508 0100	**Priority:**	5 Day
		Fax:		**Contact Name:**	Madeleine Parris
Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																
19476_R1	Mar 23, 2016		Water	M16-Ma25718							X				X					X
19476_TB1	Mar 23, 2016		Water	M16-Ma25719						X										
19476_FB1	Mar 23, 2016		Water	M16-Ma25720		X														
19476_BH6_0.2	Mar 22, 2016		Soil	M16-Ma25721	X		X		X							X	X	X	X	X
19476_BH6_0.5	Mar 22, 2016		Soil	M16-Ma25722							X	X	X	X			X			X
19476_BH3_0.3	Mar 22, 2016		Soil	M16-Ma25723							X	X	X	X			X			X
19476_BH3_0.	Mar 22, 2016		Soil	M16-Ma25724	X		X	X	X							X	X	X	X	X

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NATA # 1261 Site # 20794

Company Name:	Prensa VIC	**Order No.:**		**Received:**	Mar 24, 2016 6:39 PM
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Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
5																				
19476_BH4_0.33	Mar 23, 2016		Soil	M16-Ma25725	X		X	X	X							X	X	X	X	X
19476_BH4_0.55	Mar 23, 2016		Soil	M16-Ma25726							X	X	X	X			X			X
19476_BH7_0.2	Mar 23, 2016		Soil	M16-Ma25727							X	X	X		X		X			X
19476_BH7_0.5	Mar 23, 2016		Soil	M16-Ma25728	X		X		X							X	X		X	X
19476_BH2_0.2	Mar 23, 2016		Soil	M16-Ma25729							X	X	X	X			X			X
19476_BH2_0.	Mar 23, 2016		Soil	M16-Ma25730							X	X	X	X			X			X

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Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
5																				
19476_BH5_0.35	Mar 24, 2016		Soil	M16-Ma25731							X	X	X		X		X			X
19476_BH5_0.5	Mar 24, 2016		Soil	M16-Ma25732							X	X	X	X			X			X
19476_BH10_0.3	Mar 24, 2016		Soil	M16-Ma25733							X	X	X		X		X			X
19476_BH10_0.5	Mar 24, 2016		Soil	M16-Ma25734							X	X	X	X			X			X
19476_QC1	Mar 23, 2016		Soil	M16-Ma25735		X														
19476_QC2	Mar 23, 2016		Soil	M16-Ma25736		X														
19476_BH6_1.	Mar 22, 2016		Soil	M16-Ma25737		X														

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Project Name:	DSI LILYDALE	**Received:**	Mar 24, 2016 6:39 PM
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		Contact Name:	Madeleine Parris

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH6_1.3	Mar 22, 2016		Soil	M16-Ma25738		X														
19476_BH6_1.5	Mar 22, 2016		Soil	M16-Ma25739		X														
19476_BH3_0.8	Mar 22, 2016		Soil	M16-Ma25740		X														
19476_BH3_1.4	Mar 22, 2016		Soil	M16-Ma25741		X														
19476_BH4_1.1	Mar 23, 2016		Soil	M16-Ma25742		X														
19476_BH7_1.	Mar 23, 2016		Soil	M16-Ma25743		X														

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Project Name:	DSI LILYDALE				
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Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH2_1.0	Mar 23, 2016		Soil	M16-Ma25744		X														
19476_BH2_1.5	Mar 23, 2016		Soil	M16-Ma25745		X														
19476_BH2_2.0	Mar 23, 2016		Soil	M16-Ma25746		X														
19476_BH5_1.0	Mar 24, 2016		Soil	M16-Ma25747		X														
19476_BH5_1.5	Mar 24, 2016		Soil	M16-Ma25748		X														
19476_BH5_2.	Mar 24, 2016		Soil	M16-Ma25749		X														

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Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH10_1.0	Mar 24, 2016		Soil	M16-Ma25750		X														

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

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

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins | mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.05			0.05	Pass	
1.1-Dichloroethene	mg/kg	< 0.05			0.05	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.05			0.05	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.05			0.05	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.05			0.05	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.05			0.05	Pass	
1.2-Dibromoethane	mg/kg	< 0.05			0.05	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.05			0.05	Pass	
1.2-Dichloroethane	mg/kg	< 0.05			0.05	Pass	
1.2-Dichloropropane	mg/kg	< 0.05			0.05	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.05			0.05	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.05			0.05	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.05			0.05	Pass	
1.3-Dichloropropane	mg/kg	< 0.05			0.05	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.05			0.05	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.05			0.05	Pass	
2-Butanone (MEK)	mg/kg	< 0.05			0.05	Pass	
2-Propanone (Acetone)	mg/kg	< 0.05			0.05	Pass	
4-Chlorotoluene	mg/kg	< 0.05			0.05	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.05			0.05	Pass	
Allyl chloride	mg/kg	< 0.05			0.05	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.05			0.05	Pass	
Bromochloromethane	mg/kg	< 0.05			0.05	Pass	
Bromodichloromethane	mg/kg	< 0.05			0.05	Pass	
Bromoform	mg/kg	< 0.05			0.05	Pass	
Bromomethane	mg/kg	< 0.05			0.05	Pass	
Carbon disulfide	mg/kg	< 0.05			0.05	Pass	
Carbon Tetrachloride	mg/kg	< 0.05			0.05	Pass	
Chlorobenzene	mg/kg	< 0.05			0.05	Pass	
Chloroethane	mg/kg	< 0.05			0.05	Pass	
Chloroform	mg/kg	< 0.05			0.05	Pass	
Chloromethane	mg/kg	< 0.05			0.05	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.05			0.05	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.05			0.05	Pass	
Dibromochloromethane	mg/kg	< 0.05			0.05	Pass	
Dibromomethane	mg/kg	< 0.05			0.05	Pass	
Dichlorodifluoromethane	mg/kg	< 0.05			0.05	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.05			0.05	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.05			0.05	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
Methylene Chloride	mg/kg	< 0.05			0.05	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Styrene	mg/kg	< 0.05			0.05	Pass	
Tetrachloroethene	mg/kg	< 0.05			0.05	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.05			0.05	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.05			0.05	Pass	
Trichloroethene	mg/kg	< 0.05			0.05	Pass	
Trichlorofluoromethane	mg/kg	< 0.05			0.05	Pass	
Vinyl chloride	mg/kg	< 0.05			0.05	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Organophosphorous Pesticides							
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl azinphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Naled	mg/kg	< 0.5			0.5	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Triazines							
Atrazine	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
NEPM 2013 Acid Herbicides							
Picloram*	mg/kg	< 0.5			0.5	Pass	
2.4-D	mg/kg	< 0.5			0.5	Pass	
2.4.5-T	mg/kg	< 0.5			0.5	Pass	
MCPA	mg/kg	< 0.5			0.5	Pass	
MCPB	mg/kg	< 0.5			0.5	Pass	
Mecoprop	mg/kg	< 0.5			0.5	Pass	
Method Blank							
NEPM 2013 Phenols							
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chloride	mg/kg	< 5			5	Pass	
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	< 10			10	Pass	
Sulphate (as S)	mg/kg	< 10			10	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Boron	mg/kg	< 10			10	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 10			10	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 5			5	Pass	
Tin	mg/kg	< 10			10	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Ion Exchange Properties							
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	109			70-130	Pass	
TRH C10-C14	%	106			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	77			70-130	Pass	
1.1.1-Trichloroethane	%	97			70-130	Pass	
1.2-Dichlorobenzene	%	90			70-130	Pass	
1.2-Dichloroethane	%	89			70-130	Pass	
Benzene	%	110			70-130	Pass	
Ethylbenzene	%	108			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	
Toluene	%	112			70-130	Pass	
Trichloroethene	%	82			70-130	Pass	
Xylenes - Total	%	104			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	103			70-130	Pass	
TRH C6-C10	%	99			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	94			70-130	Pass	
Acenaphthylene	%	90			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	89			70-130	Pass	
Benzo(a)pyrene	%	99			70-130	Pass	
Benzo(b&j)fluoranthene	%	79			70-130	Pass	
Benzo(g.h.i)perylene	%	96			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(k)fluoranthene	%	90			70-130	Pass	
Chrysene	%	88			70-130	Pass	
Dibenz(a.h)anthracene	%	91			70-130	Pass	
Fluoranthene	%	84			70-130	Pass	
Fluorene	%	95			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	88			70-130	Pass	
Naphthalene	%	96			70-130	Pass	
Phenanthrene	%	95			70-130	Pass	
Pyrene	%	86			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	78			70-130	Pass	
4.4'-DDE	%	80			70-130	Pass	
4.4'-DDT	%	93			70-130	Pass	
a-BHC	%	125			70-130	Pass	
Aldrin	%	115			70-130	Pass	
b-BHC	%	120			70-130	Pass	
d-BHC	%	123			70-130	Pass	
Dieldrin	%	87			70-130	Pass	
Endosulfan I	%	98			70-130	Pass	
Endosulfan II	%	105			70-130	Pass	
Endosulfan sulphate	%	123			70-130	Pass	
Endrin	%	94			70-130	Pass	
Endrin aldehyde	%	107			70-130	Pass	
Endrin ketone	%	120			70-130	Pass	
g-BHC (Lindane)	%	121			70-130	Pass	
Heptachlor	%	118			70-130	Pass	
Heptachlor epoxide	%	111			70-130	Pass	
Hexachlorobenzene	%	119			70-130	Pass	
Methoxychlor	%	96			70-130	Pass	
LCS - % Recovery							
Organophosphorous Pesticides							
Diazinon	%	78			70-130	Pass	
Ethion	%	75			70-130	Pass	
Fenitrothion	%	72			70-130	Pass	
Methyl parathion	%	74			70-130	Pass	
Mevinphos	%	71			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	116			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	115			70-130	Pass	
LCS - % Recovery							
NEPM 2013 Acid Herbicides							
Picloram*	%	95			70-130	Pass	
2.4-D	%	119			70-130	Pass	
2.4.5-T	%	99			70-130	Pass	
MCPA	%	118			70-130	Pass	
MCPB	%	129			70-130	Pass	
Mecoprop	%	107			70-130	Pass	
LCS - % Recovery							
NEPM 2013 Phenols							
2-Methylphenol (o-Cresol)	%	93			30-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
3&4-Methylphenol (m&p-Cresol)			%	89			30-130	Pass	
Pentachlorophenol			%	66			30-130	Pass	
Phenol			%	99			30-130	Pass	
LCS - % Recovery									
Chloride			%	95			70-130	Pass	
Chromium (hexavalent)			%	99			70-130	Pass	
Sulphate (as S)			%	95			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	92			80-120	Pass	
Beryllium			%	105			80-120	Pass	
Boron			%	94			80-120	Pass	
Cadmium			%	99			80-120	Pass	
Chromium			%	104			80-120	Pass	
Cobalt			%	104			80-120	Pass	
Copper			%	105			80-120	Pass	
Lead			%	104			80-120	Pass	
Manganese			%	108			80-120	Pass	
Mercury			%	80			75-125	Pass	
Molybdenum			%	103			80-120	Pass	
Nickel			%	106			80-120	Pass	
Selenium			%	94			80-120	Pass	
Silver			%	85			80-120	Pass	
Tin			%	112			80-120	Pass	
Zinc			%	109			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Volatile Organics				Result 1					
1.1-Dichloroethene	M16-Ma26546	NCP	%	58			70-130	Fail	Q08
1.1.1-Trichloroethane	M16-Ma26546	NCP	%	83			70-130	Pass	
1.2-Dichlorobenzene	M16-Ma26546	NCP	%	84			70-130	Pass	
1.2-Dichloroethane	M16-Ma26546	NCP	%	76			70-130	Pass	
Benzene	M16-Ma26546	NCP	%	75			70-130	Pass	
Ethylbenzene	M16-Ma26546	NCP	%	77			70-130	Pass	
m&p-Xylenes	M16-Ma26546	NCP	%	79			70-130	Pass	
o-Xylene	M16-Ma26546	NCP	%	79			70-130	Pass	
Toluene	M16-Ma26546	NCP	%	76			70-130	Pass	
Trichloroethene	M16-Ma26546	NCP	%	73			70-130	Pass	
Xylenes - Total	M16-Ma26546	NCP	%	79			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-Ma26546	NCP	%	70			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M16-Ma25721	CP	%	89			70-130	Pass	
4.4'-DDT	M16-Ma25721	CP	%	98			70-130	Pass	
a-BHC	M16-Ma25721	CP	%	122			70-130	Pass	
Aldrin	M16-Ma25721	CP	%	125			70-130	Pass	
b-BHC	M16-Ma25721	CP	%	126			70-130	Pass	
d-BHC	M16-Ma25721	CP	%	129			70-130	Pass	
Endosulfan I	M16-Ma25721	CP	%	97			70-130	Pass	
Endosulfan II	M16-Ma25721	CP	%	101			70-130	Pass	
Endosulfan sulphate	M16-Ma25721	CP	%	116			70-130	Pass	
Endrin	M16-Ma25721	CP	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	M16-Ma25721	CP	%	101			70-130	Pass	
Endrin ketone	M16-Ma25721	CP	%	123			70-130	Pass	
g-BHC (Lindane)	M16-Ma25721	CP	%	127			70-130	Pass	
Heptachlor	M16-Ma25721	CP	%	127			70-130	Pass	
Heptachlor epoxide	M16-Ma25721	CP	%	113			70-130	Pass	
Hexachlorobenzene	M16-Ma25721	CP	%	129			70-130	Pass	
Spike - % Recovery									
NEPM 2013 Acid Herbicides				Result 1					
Picloram*	S16-Ma25139	NCP	%	88			70-130	Pass	
2.4-D	S16-Ma25139	NCP	%	113			70-130	Pass	
MCPA	S16-Ma25139	NCP	%	101			70-130	Pass	
MCPB	S16-Ma25139	NCP	%	85			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ma26187	NCP	%	99			70-130	Pass	
Chromium (hexavalent)	M16-Ma25615	NCP	%	87			70-130	Pass	
Sulphate (as S)	M16-Ma22555	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Boron	M16-Ma26854	NCP	%	82			75-125	Pass	
Selenium	M16-Ma26854	NCP	%	78			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-Ap02036	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH C6-C10	M16-Ap02036	NCP	%	76			70-130	Pass	
Spike - % Recovery									
Organophosphorous Pesticides				Result 1					
Diazinon	M16-Ma25723	CP	%	72			70-130	Pass	
Ethion	M16-Ma25723	CP	%	77			70-130	Pass	
Fenitrothion	M16-Ma25723	CP	%	76			70-130	Pass	
Methyl parathion	M16-Ma25723	CP	%	81			70-130	Pass	
Mevinphos	M16-Ma25723	CP	%	75			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Ma25725	CP	%	97			70-130	Pass	
Acenaphthylene	M16-Ma25725	CP	%	101			70-130	Pass	
Anthracene	M16-Ma25725	CP	%	79			70-130	Pass	
Benz(a)anthracene	M16-Ma25725	CP	%	105			70-130	Pass	
Benzo(a)pyrene	M16-Ma25725	CP	%	78			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Ma25725	CP	%	71			70-130	Pass	
Benzo(g.h.i)perylene	M16-Ma25725	CP	%	86			70-130	Pass	
Benzo(k)fluoranthene	M16-Ma25725	CP	%	96			70-130	Pass	
Chrysene	M16-Ma25725	CP	%	96			70-130	Pass	
Dibenz(a.h)anthracene	M16-Ma25725	CP	%	82			70-130	Pass	
Fluoranthene	M16-Ma25725	CP	%	96			70-130	Pass	
Fluorene	M16-Ma25725	CP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Ma25725	CP	%	83			70-130	Pass	
Naphthalene	M16-Ma25725	CP	%	94			70-130	Pass	
Phenanthrene	M16-Ma25725	CP	%	101			70-130	Pass	
Pyrene	M16-Ma25725	CP	%	90			70-130	Pass	
Spike - % Recovery									
NEPM 2013 Phenols				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Methylphenol (o-Cresol)	M16-Ma25725	CP	%	105			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M16-Ma25725	CP	%	102			30-130	Pass	
Pentachlorophenol	M16-Ma25725	CP	%	83			30-130	Pass	
Phenol	M16-Ma25725	CP	%	110			30-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Ma25726	CP	%	81			75-125	Pass	
Beryllium	M16-Ma25726	CP	%	78			75-125	Pass	
Cadmium	M16-Ma25726	CP	%	76			75-125	Pass	
Chromium	M16-Ma25726	CP	%	80			75-125	Pass	
Cobalt	M16-Ma25726	CP	%	86			75-125	Pass	
Copper	M16-Ma25726	CP	%	92			75-125	Pass	
Lead	M16-Ma25726	CP	%	80			75-125	Pass	
Manganese	M16-Ma25726	CP	%	97			75-125	Pass	
Mercury	M16-Ma25726	CP	%	94			70-130	Pass	
Molybdenum	M16-Ma25726	CP	%	86			75-125	Pass	
Nickel	M16-Ma25726	CP	%	86			75-125	Pass	
Silver	M16-Ma25726	CP	%	85			75-125	Pass	
Tin	M16-Ma25726	CP	%	81			75-125	Pass	
Zinc	M16-Ma25726	CP	%	78			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M16-Ma25727	CP	%	104			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Ma25727	CP	%	113			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M16-Ma25731	CP	%	78			70-130	Pass	
4.4'-DDE	M16-Ma25731	CP	%	99			70-130	Pass	
4.4'-DDT	M16-Ma25731	CP	%	93			70-130	Pass	
a-BHC	M16-Ma25731	CP	%	125			70-130	Pass	
Aldrin	M16-Ma25731	CP	%	115			70-130	Pass	
b-BHC	M16-Ma25731	CP	%	120			70-130	Pass	
d-BHC	M16-Ma25731	CP	%	123			70-130	Pass	
Dieldrin	M16-Ma25731	CP	%	88			70-130	Pass	
Endosulfan I	M16-Ma25731	CP	%	98			70-130	Pass	
Endosulfan II	M16-Ma25731	CP	%	105			70-130	Pass	
Endosulfan sulphate	M16-Ma25731	CP	%	123			70-130	Pass	
Endrin	M16-Ma25731	CP	%	94			70-130	Pass	
Endrin aldehyde	M16-Ma25731	CP	%	107			70-130	Pass	
Endrin ketone	M16-Ma25731	CP	%	120			70-130	Pass	
g-BHC (Lindane)	M16-Ma25731	CP	%	121			70-130	Pass	
Heptachlor	M16-Ma25731	CP	%	118			70-130	Pass	
Heptachlor epoxide	M16-Ma25731	CP	%	111			70-130	Pass	
Hexachlorobenzene	M16-Ma25731	CP	%	119			70-130	Pass	
Methoxychlor	M16-Ma25731	CP	%	96			70-130	Pass	
Spike - % Recovery									
Organophosphorous Pesticides				Result 1					
Diazinon	M16-Ma25733	CP	%	127			70-130	Pass	
Ethion	M16-Ma25733	CP	%	117			70-130	Pass	
Fenitrothion	M16-Ma25733	CP	%	111			70-130	Pass	
Methyl parathion	M16-Ma25733	CP	%	91			70-130	Pass	
Mevinphos	M16-Ma25733	CP	%	118			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Ma26545	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.1-Dichloroethene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.1.1-Trichloroethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.1.2-Trichloroethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.2-Dibromoethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.2-Dichlorobenzene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.2-Dichloroethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.2-Dichloropropane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.2.3-Trichloropropane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.2.4-Trimethylbenzene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.3-Dichlorobenzene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.3-Dichloropropane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.3.5-Trimethylbenzene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
1.4-Dichlorobenzene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
2-Butanone (MEK)	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
2-Propanone (Acetone)	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4-Chlorotoluene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Allyl chloride	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Benzene	M16-Ma26545	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Bromobenzene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Bromochloromethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Bromodichloromethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Bromoform	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Bromomethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Carbon disulfide	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Carbon Tetrachloride	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Chlorobenzene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Chloroethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Chloroform	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Chloromethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
cis-1.2-Dichloroethene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
cis-1.3-Dichloropropene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dibromochloromethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dibromomethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dichlorodifluoromethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Ethylbenzene	M16-Ma26545	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Iodomethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Isopropyl benzene (Cumene)	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
m&p-Xylenes	M16-Ma26545	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methylene Chloride	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
o-Xylene	M16-Ma26545	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Styrene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Tetrachloroethene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toluene	M16-Ma26545	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
trans-1.2-Dichloroethene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
trans-1.3-Dichloropropene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

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Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
Trichloroethene	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Trichlorofluoromethane	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Vinyl chloride	M16-Ma26545	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Xylenes - Total	M16-Ma26545	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Ma26545	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Ma26545	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
NEPM 2013 Acid Herbicides				Result 1	Result 2	RPD			
Picloram*	M16-Ma25691	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-D	M16-Ma25691	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-T	M16-Ma25691	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
MCPA	M16-Ma25691	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
MCPB	M16-Ma25691	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Mecoprop	M16-Ma25691	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ma26186	NCP	mg/kg	51	49	4.4	30%	Pass	
Chromium (hexavalent)	M16-Ma25600	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Sulphate (as S)	M16-Ma22549	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organophosphorous Pesticides				Result 1	Result 2	RPD			
Bolstar	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl azinphos	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
Organophosphorous Pesticides				Result 1	Result 2	RPD			
Methyl parathion	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Naled	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phorate	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Triazines				Result 1	Result 2	RPD			
Atrazine	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
NEPM 2013 Phenols				Result 1	Result 2	RPD			
2-Methylphenol (o-Cresol)	M16-Ma25722	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M16-Ma25722	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Pentachlorophenol	M16-Ma25722	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Phenol	M16-Ma25722	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organophosphorous Pesticides				Result 1	Result 2	RPD			
Bolstar	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl azinphos	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Naled	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phorate	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
Organophosphorous Pesticides				Result 1	Result 2	RPD			
Tokuthion	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Triazines				Result 1	Result 2	RPD			
Atrazine	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
NEPM 2013 Phenols				Result 1	Result 2	RPD			
2-Methylphenol (o-Cresol)	M16-Ma25724	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M16-Ma25724	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Pentachlorophenol	M16-Ma25724	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Phenol	M16-Ma25724	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C)	M16-Ma25725	CP	uS/cm	160	160	2.0	30%	Pass	
pH (1:5 Aqueous extract)	M16-Ma25725	CP	pH Units	8.4	8.6	pass	30%	Pass	
pH (units)(1:5 soil:CaCl2 extract)	M16-Ma25725	CP	pH Units	7.6	7.6	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Ma25725	CP	mg/kg	13	13	3.0	30%	Pass	
Beryllium	M16-Ma25725	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron	M16-Ma25725	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Cadmium	M16-Ma25725	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Ma25725	CP	mg/kg	24	29	18	30%	Pass	
Cobalt	M16-Ma25725	CP	mg/kg	18	21	14	30%	Pass	
Copper	M16-Ma25725	CP	mg/kg	38	51	30	30%	Pass	
Lead	M16-Ma25725	CP	mg/kg	12	11	12	30%	Pass	
Manganese	M16-Ma25725	CP	mg/kg	640	620	4.0	30%	Pass	
Mercury	M16-Ma25725	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Molybdenum	M16-Ma25725	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Nickel	M16-Ma25725	CP	mg/kg	57	59	5.0	30%	Pass	
Selenium	M16-Ma25725	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M16-Ma25725	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Tin	M16-Ma25725	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Zinc	M16-Ma25725	CP	mg/kg	39	45	14	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M16-Ma25726	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Ma25726	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M16-Ma25726	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-Ma25726	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Ma25726	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Ma25726	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Ma25726	CP	mg/kg	17	16	4.0	30%	Pass	
Beryllium	M16-Ma25726	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron	M16-Ma25726	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Cadmium	M16-Ma25726	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Ma25726	CP	mg/kg	24	24	2.0	30%	Pass	
Cobalt	M16-Ma25726	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	M16-Ma25726	CP	mg/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	M16-Ma25726	CP	mg/kg	15	20	27	30%	Pass	
Manganese	M16-Ma25726	CP	mg/kg	14	15	5.0	30%	Pass	
Mercury	M16-Ma25726	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Molybdenum	M16-Ma25726	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Nickel	M16-Ma25726	CP	mg/kg	5.7	5.6	2.0	30%	Pass	
Selenium	M16-Ma25726	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M16-Ma25726	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Tin	M16-Ma25726	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Zinc	M16-Ma25726	CP	mg/kg	10	10.0	3.0	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Bifenthrin	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Chlordanes - Total	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Ma25728	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Ma25728	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M16-Ma25728	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
NEPM 2013 Organochlorine Pesticides				Result 1	Result 2	RPD			
Mirex	M16-Ma25728	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
b-BHC	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Ma25730	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Ma25730	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M16-Ma25730	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Ma25730	CP	%	10	10.0	4.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organophosphorous Pesticides				Result 1	Result 2	RPD			
Bolstar	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
Organophosphorous Pesticides				Result 1	Result 2	RPD			
Ethion	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl azinphos	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Naled	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phorate	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Triazines				Result 1	Result 2	RPD			
Atrazine	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
NEPM 2013 Phenols				Result 1	Result 2	RPD			
2-Methylphenol (o-Cresol)	M16-Ma25732	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M16-Ma25732	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Pentachlorophenol	M16-Ma25732	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Phenol	M16-Ma25732	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Sarah Gould	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Mele Singh	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

eurofins | mgt

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Prensa VIC
261-271 Wattletree Rd
Malvern
VIC 3144

Attention: **Madeleine Parris**

Report	**494396-W**
Project name	DSI LILYDALE
Project ID	19476
Received Date	Mar 24, 2016

Client Sample ID			**19476_R1**	**19476_TB1**
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**M16-Ma25718**	**M16-Ma25719**
Date Sampled			**Mar 23, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.01	mg/L	< 0.01	-
TRH C6-C10	0.02	mg/L	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	-
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.001	mg/L	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	-
Benz(a)anthracene	0.001	mg/L	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	-
Fluorene	0.001	mg/L	< 0.001	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	-
Naphthalene	0.001	mg/L	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	-
Total PAH*	0.001	mg/L	< 0.001	-
2-Fluorobiphenyl (surr.)	1	%	58	-
p-Terphenyl-d14 (surr.)	1	%	78	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16	0.05	mg/L	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	-
Chromium (hexavalent)	0.001	mg/L	< 0.001	-

Client Sample ID			**19476_R1**	**19476_TB1**
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**M16-Ma25718**	**M16-Ma25719**
Date Sampled			**Mar 23, 2016**	**Mar 23, 2016**
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	< 0.001	-
Beryllium	0.001	mg/L	< 0.001	-
Boron	0.05	mg/L	< 0.05	-
Cadmium	0.0002	mg/L	< 0.0002	-
Cobalt	0.001	mg/L	< 0.001	-
Copper	0.001	mg/L	< 0.001	-
Lead	0.001	mg/L	< 0.001	-
Manganese	0.005	mg/L	< 0.005	-
Mercury	0.0001	mg/L	< 0.0001	-
Nickel	0.001	mg/L	< 0.001	-
Selenium	0.001	mg/L	< 0.001	-
Zinc	0.001	mg/L	< 0.001	-

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Mar 29, 2016	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 29, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 29, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding Methyl Mercury/PBDE			
Polycyclic Aromatic Hydrocarbons	Melbourne	Mar 29, 2016	7 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Chromium (hexavalent)	Melbourne	Apr 01, 2016	28 Day
- Method: Cr (VI) by MGT 1170A			
Heavy Metals	Melbourne	Mar 29, 2016	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

Company Name:	Prensa VIC	**Order No.:**		**Received:**	Mar 24, 2016 6:39 PM
Address:	261-271 Wattletree Rd Malvern VIC 3144	**Report #:**	494396	**Due:**	Apr 5, 2016
		Phone:	9508 0100	**Priority:**	5 Day
		Fax:		**Contact Name:**	Madeleine Parris
Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																
19476_R1	Mar 23, 2016		Water	M16-Ma25718							X				X					X
19476_TB1	Mar 23, 2016		Water	M16-Ma25719						X										
19476_FB1	Mar 23, 2016		Water	M16-Ma25720		X														
19476_BH6_0.2	Mar 22, 2016		Soil	M16-Ma25721	X		X		X							X	X	X	X	X
19476_BH6_0.5	Mar 22, 2016		Soil	M16-Ma25722							X	X	X	X			X			X
19476_BH3_0.3	Mar 22, 2016		Soil	M16-Ma25723							X	X	X	X			X			X
19476_BH3_0.	Mar 22, 2016		Soil	M16-Ma25724	X		X	X	X							X	X	X	X	X

Company Name: Prensa VIC
Address: 261-271 Wattletree Rd
Malvern
VIC 3144

Project Name: DSI LILYDALE
Project ID: 19476

Order No.:
Report #: 494396
Phone: 9508 0100
Fax:

Received: Mar 24, 2016 6:39 PM
Due: Apr 5, 2016
Priority: 5 Day
Contact Name: Madeleine Parris

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
5																				
19476_BH4_0.33	Mar 23, 2016		Soil	M16-Ma25725	X		X	X	X							X	X	X	X	X
19476_BH4_0.55	Mar 23, 2016		Soil	M16-Ma25726							X	X	X	X			X			X
19476_BH7_0.2	Mar 23, 2016		Soil	M16-Ma25727							X	X	X		X		X			X
19476_BH7_0.5	Mar 23, 2016		Soil	M16-Ma25728	X		X		X							X	X		X	X
19476_BH2_0.2	Mar 23, 2016		Soil	M16-Ma25729							X	X	X	X			X			X
19476_BH2_0.	Mar 23, 2016		Soil	M16-Ma25730							X	X	X	X			X			X

Company Name:	Prensa VIC	**Order No.:**	
Address:	261-271 Wattletree Rd Malvern VIC 3144	**Report #:**	494396
		Phone:	9508 0100
		Fax:	
Project Name:	DSI LILYDALE	**Received:**	Mar 24, 2016 6:39 PM
Project ID:	19476	**Due:**	Apr 5, 2016
		Priority:	5 Day
		Contact Name:	Madeleine Parris

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
5																				
19476_BH5_0.35	Mar 24, 2016		Soil	M16-Ma25731							X	X	X		X		X			X
19476_BH5_0.5	Mar 24, 2016		Soil	M16-Ma25732							X	X	X	X			X			X
19476_BH10_0.3	Mar 24, 2016		Soil	M16-Ma25733							X	X	X		X		X			X
19476_BH10_0.5	Mar 24, 2016		Soil	M16-Ma25734							X	X	X	X			X			X
19476_QC1	Mar 23, 2016		Soil	M16-Ma25735		X														
19476_QC2	Mar 23, 2016		Soil	M16-Ma25736		X														
19476_BH6_1.	Mar 22, 2016		Soil	M16-Ma25737		X														

Company Name:	Prensa VIC	**Order No.:**		**Received:**	Mar 24, 2016 6:39 PM
Address:	261-271 Wattletree Rd Malvern VIC 3144	**Report #:**	494396	**Due:**	Apr 5, 2016
		Phone:	9508 0100	**Priority:**	5 Day
		Fax:		**Contact Name:**	Madeleine Parris
Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH6_1.3	Mar 22, 2016		Soil	M16-Ma25738		X														
19476_BH6_1.5	Mar 22, 2016		Soil	M16-Ma25739		X														
19476_BH3_0.8	Mar 22, 2016		Soil	M16-Ma25740		X														
19476_BH3_1.4	Mar 22, 2016		Soil	M16-Ma25741		X														
19476_BH4_1.1	Mar 23, 2016		Soil	M16-Ma25742		X														
19476_BH7_1.	Mar 23, 2016		Soil	M16-Ma25743		X														

Company Name:	Prensa VIC	**Order No.:**		**Received:**	Mar 24, 2016 6:39 PM
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		Phone:	9508 0100	**Priority:**	5 Day
		Fax:		**Contact Name:**	Madeleine Parris
Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH2_1.0	Mar 23, 2016		Soil	M16-Ma25744		X														
19476_BH2_1.5	Mar 23, 2016		Soil	M16-Ma25745		X														
19476_BH2_2.0	Mar 23, 2016		Soil	M16-Ma25746		X														
19476_BH5_1.0	Mar 24, 2016		Soil	M16-Ma25747		X														
19476_BH5_1.5	Mar 24, 2016		Soil	M16-Ma25748		X														
19476_BH5_2.	Mar 24, 2016		Soil	M16-Ma25749		X														

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Site # 1254 & 14271

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Murarrie QLD 4172
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NATA # 1261 Site # 20794

Company Name:	Prensa VIC	**Order No.:**		**Received:**	Mar 24, 2016 6:39 PM
Address:	261-271 Wattletree Rd	**Report #:**	494396	**Due:**	Apr 5, 2016
	Malvern	**Phone:**	9508 0100	**Priority:**	5 Day
	VIC 3144	**Fax:**		**Contact Name:**	Madeleine Parris
Project Name:	DSI LILYDALE				
Project ID:	19476				

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chloride	HOLD	pH (1:5 Aqueous extract)	pH (units)(1:5 soil:CaCl2 extract)	Sulphate (as S)	TRH C6-C9	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	IWRG 621 Metals : Metals M12	NEPM 2013 Metals : Metals M13	Volatile Organics	Moisture Set	Cation Exchange Capacity	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted																				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																				
Brisbane Laboratory - NATA Site # 20794																				
External Laboratory																				
0																				
19476_BH10_1.0	Mar 24, 2016		Soil	M16-Ma25750		X														

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins | mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

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

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Chromium (hexavalent)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Boron	mg/L	< 0.05			0.05	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	96			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	88			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	101			70-130	Pass	
TRH C6-C10	%	97			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	89			70-130	Pass	
Acenaphthylene	%	94			70-130	Pass	
Anthracene	%	88			70-130	Pass	
Benz(a)anthracene	%	91			70-130	Pass	
Benzo(a)pyrene	%	94			70-130	Pass	
Benzo(b&j)fluoranthene	%	99			70-130	Pass	
Benzo(g.h.i)perylene	%	74			70-130	Pass	
Benzo(k)fluoranthene	%	95			70-130	Pass	
Chrysene	%	92			70-130	Pass	
Dibenz(a.h)anthracene	%	81			70-130	Pass	
Fluoranthene	%	97			70-130	Pass	
Fluorene	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	77			70-130	Pass	
Naphthalene	%	90			70-130	Pass	
Phenanthrene	%	90			70-130	Pass	
Pyrene	%	100			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	87			70-130	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	108			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	96			80-120	Pass	
Beryllium	%	92			80-120	Pass	
Boron	%	96			80-120	Pass	
Cadmium	%	98			80-120	Pass	
Cobalt	%	97			80-120	Pass	
Copper	%	97			80-120	Pass	
Lead	%	98			80-120	Pass	
Manganese	%	96			80-120	Pass	
Mercury	%	103			75-125	Pass	
Nickel	%	97			80-120	Pass	
Selenium	%	99			80-120	Pass	
Zinc	%	95			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M16-Ma25849	NCP	%	112			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Ma25849	NCP	%	107			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M16-Ma29443	NCP	%	104			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	M16-Ma23713	NCP	%	83			75-125	Pass	
Beryllium	M16-Ma23713	NCP	%	93			75-125	Pass	
Boron	M16-Ma22665	NCP	%	91			75-125	Pass	
Cadmium	M16-Ma23713	NCP	%	96			75-125	Pass	
Cobalt	M16-Ma23713	NCP	%	96			75-125	Pass	
Copper	M16-Ma23713	NCP	%	95			75-125	Pass	
Lead	M16-Ma23713	NCP	%	90			75-125	Pass	
Manganese	M16-Ma23713	NCP	%	93			75-125	Pass	
Mercury	M16-Ma23713	NCP	%	89			70-130	Pass	
Nickel	M16-Ma23713	NCP	%	94			75-125	Pass	
Selenium	M16-Ma23713	NCP	%	91			75-125	Pass	
Zinc	M16-Ma25618	NCP	%	103			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S16-Ma22273	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S16-Ma22273	NCP	mg/L	0.2	0.2	<1	30%	Pass	
TRH C29-C36	S16-Ma22273	NCP	mg/L	0.1	0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S16-Ma22273	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S16-Ma22273	NCP	mg/L	0.3	0.3	<1	30%	Pass	
TRH >C34-C40	S16-Ma22273	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chromium (hexavalent)	M16-Ma25945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Ma23713	NCP	mg/L	0.26	0.27	4.0	30%	Pass	
Beryllium	M16-Ma23713	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron	M16-Ma25946	NCP	mg/L	0.05	0.12	83	30%	Fail	Q15
Cadmium	M16-Ma23713	NCP	mg/L	0.0040	0.0041	3.0	30%	Pass	
Cobalt	M16-Ma23713	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Copper	M16-Ma23713	NCP	mg/L	0.055	0.057	4.0	30%	Pass	
Lead	M16-Ma23713	NCP	mg/L	0.21	0.21	4.0	30%	Pass	
Manganese	M16-Ma23713	NCP	mg/L	0.065	0.065	1.0	30%	Pass	
Mercury	M16-Ma23713	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Ma23713	NCP	mg/L	0.011	0.009	22	30%	Pass	
Selenium	M16-Ma23713	NCP	mg/L	0.51	0.50	3.0	30%	Pass	
Zinc	M16-Ma23713	NCP	mg/L	0.59	0.60	3.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Sarah Gould	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Mele Singh	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

A division of Envirolab Group

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SAMPLE RECEIPT ADVICE

Client Details	
Client	Prensa
Attention	Madeleine Parris

Sample Login Details	
Your Reference	19476 - 15 Anderson St, Lilydale, VIC 3140
Envirolab Reference	**8189**
Date Sample Received	30/03/2016
Date Instructions Received	30/03/2016
Date Results Expected to be Reported	**06/04/2016**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on receipt (°C)	3.3C
Cooling Method	Ice
Sampling Date Provided	YES

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

Please direct any queries to:

Chris De Luca	**Analisa Mathrick**
Phone: 03 9763 2500	Phone: 03 9763 2500
Fax: 03 9763 2633	Fax: 03 9763 2633
Email: cdeluca@envirolab.com.au	Email: amathrick@envirolab.com.au

Sample and Testing Details on following page

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Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*TRH Soil C10-C40 NEPM*	*PAHs in Soil*	*13 metals in soil*
19476_QC2	✓	✓	✓	✓

1 Dalmore Drive, Scoresby, Victoria 3179
tel: +61 3 9763 2500

email: melbourne@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Melbourne | ABN 37 112 535 645 - 002

CERTIFICATE OF ANALYSIS 8189

Client:
Prensa
Po Box 2203 Wattletree rd LPO
Malvern East
VIC 3145

Attention: Madeleine Parris

Sample log in details:

Your Reference:	**19476 - 15 Anderson St, Lilydale, VIC 3140**
No. of samples:	1 Soil
Date samples received / completed instructions received	30/03/2016 / 30/03/2016

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:	6/04/16 / 6/04/16
Date of Preliminary Report:	Not Issued

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Results Approved By:

A Mathrick

Analisa Mathrick
Laboratory Manager

ACCREDITED FOR TECHNICAL COMPETENCE

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	8189-1
Your Reference	-------------	19476_QC2
Date Sampled	------------	23/03/2016
Type of sample		Soil
Date extracted	-	31/03/2016
Date analysed	-	31/03/2016
vTRH C_6 - C_9	mg/kg	<25
vTRH C_6 - C_{10}	mg/kg	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	83

TRH Soil C10-C40 NEPM		
Our Reference:	UNITS	8189-1
Your Reference	-------------	19476_QC2
Date Sampled	------------	23/03/2016
Type of sample		Soil
Date extracted	-	31/03/2016
Date analysed	-	31/03/2016
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10}-C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16}-C_{34}	mg/kg	<100
TRH >C_{34}-C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	84

PAHs in Soil		
Our Reference:	UNITS	8189-1
Your Reference	-------------	19476_QC2
Date Sampled	------------	23/03/2016
Type of sample		Soil
Date extracted	-	31/03/2016
Date analysed	-	31/03/2016
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d_{14}	%	94

13 metals in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ------------- ------------	8189-1 19476_QC2 23/03/2016 Soil
Date digested	-	31/03/2016
Date analysed	-	01/04/2016
Arsenic	mg/kg	<4
Beryllium	mg/kg	<1
Barium	mg/kg	96
Cadmium	mg/kg	<0.4
Chromium	mg/kg	11
Cobalt	mg/kg	2
Copper	mg/kg	5
Nickel	mg/kg	6
Lead	mg/kg	31
Manganese	mg/kg	91
Mercury	mg/kg	<0.1
Vanadium	mg/kg	33
Zinc	mg/kg	30

Moisture		
Our Reference:	UNITS	8189-1
Your Reference	-------------	19476_QC2
Date Sampled	------------	23/03/2016
Type of sample		Soil
Date prepared	-	31/03/2016
Date analysed	-	01/04/2016
Moisture	%	13

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

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			31/03/2016	[NT]	[NT]	LCS-1	31/03/2016
Date analysed	-			31/03/2016	[NT]	[NT]	LCS-1	31/03/2016
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	89%
vTRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	89%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-1	89%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-1	77%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	89%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-1	95%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	91%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	90	[NT]	[NT]	LCS-1	89%

QUALITY CONTROL TRH Soil C10-C40 NEPM	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			31/03/2016	[NT]	[NT]	LCS-1	31/03/2016
Date analysed	-			31/03/2016	[NT]	[NT]	LCS-1	31/03/2016
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	90%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	84%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	80%
TRH >C_{10}-C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	90%
TRH >C_{16}-C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	84%
TRH >C_{34}-C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	80%
Surrogate o-Terphenyl	%		Org-003	74	[NT]	[NT]	LCS-1	104%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			31/03/2016	[NT]	[NT]	LCS-1	31/03/2016
Date analysed	-			31/03/2016	[NT]	[NT]	LCS-1	31/03/2016
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	104%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	106%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	104%
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	110%
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	116%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	86%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(b,j&k) fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	LCS-1	130%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012	92	[NT]	[NT]	LCS-1	84%

QUALITY CONTROL 13 metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			31/03/2016	[NT]	[NT]	LCS-1	31/03/2016
Date analysed	-			01/04/2016	[NT]	[NT]	LCS-1	01/04/2016
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	94%
Beryllium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	110%
Barium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	102%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-1	99%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Cobalt	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	97%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	97%
Manganese	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	103%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	102%
Vanadium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	97%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	96%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

Report Comments:

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

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NR: 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 batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

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

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

Appendix N: Geotechnical Report

GeoAust Geotechnical Engineers Pty Ltd

GEOTECHNICAL INVESTIGATION REPORT

STAGE 1 GEOTECHNICAL INVESTIGATION REPORT
PROPOSED REDEVELOPMENT OF
YARRA RANGES COUNCIL MUNICIPAL OFFICES

15 ANDERSON STREET

LILYDALE VIC

PREPARED FOR

PRENSA PTY LTD

JOB NO: 4548-5-R (REVISION 1)

16 MAY 2016

DISTRIBUTION:

PRENSA PTY LTD

EXECUTIVE SUMARY

GeoAust was engaged by Prensa to conduct a geotechnical investigation for a new office addition extending to the north of the existing Yarra Ranges Council municipal office building at 15 Anderson Street, Lilydale. It was also required to assess subsurface conditions around the perimeter of the existing library building at the same site and provide comments on the cause(s) of the footing movement which has contributed to the structural distress within the building. Appropriate recommendations for suitable remedial measures, which will reduce future movements, have also been provided.

The Geological Survey of Victoria indicates the site to be located close to the contact between Quaternary age alluvial deposits and Devonian age rhyolite. The clays are typically moderately to highly reactive, that is they exhibit appreciable changes in volume when subjected to changes in moisture content. The depth to rhyolite can vary significantly over short lateral distances as was demonstrated by the boreholes, which indicated high to very strength rhyolite to be present at depths vary between 0.28 and 8.37 metres below the ground surface.

The presence of moisture softened and highly reactive clays at the subject site, together with the presence of numerous trees at, and adjacent to, the subject site, precludes the use of shallow footing arrangements founded on clay for the support of the proposed new office structure. The use of shallow footings founded on clay will result in poor performance of the proposed structure. It will be necessary to found all footings for the proposed structure on rhyolite rock at the base of any clay. At locations where the depth to the rhyolite exceeds approximately 1.5 metres below the finished ground surface it is anticipated that it will be more economical and practicable to suspend the structure on a series of bored piles which are socketed into the rhyolite. However, the construction of bored piles socketed into the rhyolite must take into account the high to very high strength of the rhyolite. The very high strength rhyolite will necessitate the use of a high capacity drilling rig equipped with a rock coring bucket and the rate of coring will be extremely slow.

The library building at the south end of the site is underlain by highly reactive clay soils, which undergo significant changes in volume upon changes in moisture content. Upon wetting the clays swell appreciably and conversely upon drying the clays shrink. The volumetric changes that have occurred at the subject site have exceeded those able to be accommodated by the subject structure, resulting in the observed distress at various locations throughout the structure.

Based on the results of the testing carried out the following factors are likely to have significantly influenced the performance of the footings providing support to the library building:

- The existing strip footings are inadequate in relation to the highly reactive clays underlying the site.
- It is understood that there has been a history of numerous pipes connecting to the subject building having leaked and/or ruptured at various times over the life of the structure. The presence of uncontrolled water ingress into the high plasticity clay will lead to appreciable heaving of the clay. The pressures exerted by heaving clay are in excess of those able to be accommodated by the structure.
- The numerous trees located within close proximity to the subject building have had an appreciable effect on the clay founding stratum. Individual trees located within 1.0 times their mature height of footings are recognised as being capable of causing settlement related damage to structures in high plasticity clays.

For trees in group plantings this distance extends up to 2.0 times the mature heights of the individual trees. The numerous small to large sized trees located immediately adjacent to the subject building are therefore well capable of having caused the damage observed within the structure.

If underpinning of the footings which provide support to the library building is to be avoided, the following items must be addressed in an effort to stabilise the moisture content regime within the clay founding stratum:

- All trees in the immediate vicinity of the subject building must be removed without delay. No additional trees should be planted at, or adjacent to, the subject site.
- All services connecting to the structure must be checked for leaks and blockages. Any leaking pipes, no matter how minor, must be repaired immediately. Failure to eliminate any concentrated sources of the moisture is anticipated to cause ongoing additional damage to the subject structure.
- The surface drainage around the perimeter of the structure must be checked to ensure that water is able to freely shed away from the structure to a legal point of discharge.

Upon carrying out the above remedial measures, the performance of the structure will need to be accurately monitored for at least 24 months. This will allow the moisture regime of the highly plasticity clays underlying the subject building to stabilise. If movements have significantly reduced and are considered acceptable, appropriate repairs may be made to the structure.

If it is not possible to implement one or more of the above remedial measure, or alternatively, if appreciable continuing movements are observed within the subject structure some 24 months after efforts have been made to stabilise the moisture content regime of the clay founding stratum, it will be necessary to underpin the subject structure to a stable founding stratum.

In considering underpinning as a means of stabilising footing movements within the subject building it must be recognised, that whilst underpinning of isolated problem areas will often stabilise the distressed portion of the structure being treated, it in itself may lead to some cracking of sections which are currently in relatively good repair. Underpinning should therefore be extensive rather than localised, in order to minimise future foundation related movements at transition points.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 COMMISSION

The geotechnical investigation was commissioned by Ms Christie Batiste of Prensa Pty Ltd. The scope of works for the geotechnical investigation was in accordance with our fee proposal with reference 4548-4-Q dated 10 March 2016.

1.2 PROPOSED DEVELOPMENT

Based on the information provided to GeoAust, it was understood that it is proposed by Yarra Ranges Council to construct a new office addition extending to the north of the existing municipal office building at 15 Anderson Street, Lilydale. The proposed addition is likely to be either a single level structure with an approximate plan area of 1800 square metres or a two storey structure with an approximate ground floor plan area of 3000 square metres. The proposed addition will not include any basement levels.

In the absence of any architectural and structural details regarding the proposed development the following has been assumed about the proposed development:

- Construction will be typical of reinforced concrete framed commercial structures.
- No unusual performance criteria will apply to the proposed structure.
- The preferred footing system for the proposed structure will comprise conventional pad and strip footings.

In addition to the proposed office addition extending to the north of the existing municipal office building, it was understood that the footings providing support to the existing municipal library at the same site have subsided, causing structural distress to the structure. As part of the geotechnical investigation it was also required to assess subsurface conditions around the perimeter of the existing library building and, based on the information obtained, provide comments on the cause(s) of the footing movement which has led to the current level of structural distress within the subject building. Appropriate recommendations for suitable remedial measures, which will reduce future movements, have also been provided.

1.3 INVESTIGATION OBJECTIVES

Based on our experience of geotechnical conditions in the general area of the subject site, in conjunction with our understanding of the proposed development, the objectives of the proposed geotechnical investigation were as follows:

- Investigate the subsurface soil and rock conditions at the subject site, relevant to the proposed development.
- Investigate the ground water conditions at the subject site, relevant to the proposed development.
- Classification of the site in accordance with Australian Standard AS 2870 – 2011, ‘Residential Slabs and Footings’.
- Provide a sub-soil class and a hazard factor applicable to the site for earthquake design of the proposed structure in accordance with Australian Standard AS 1170.4 – 2007, ‘Structural Design Actions, Part 4: Earthquake Actions in Australia’.
- Provide recommendations for alternative footing systems relevant to the proposed development, including design parameters and estimates of settlements for each of the footing systems.
- Provide recommendations for the design and construction of floor slabs and pavements relevant to the proposed development.
- Provide advice on construction issues relevant to the footings and pavements for the proposed development.
- Assess the subsurface soil conditions around the perimeter of the existing library building.
- Provide comments on the cause(s) of the footing movement which has led to the current level of structural distress within the existing library building.
- Provide appropriate recommendations for suitable remedial measures, which will reduce future movements within the existing library building.

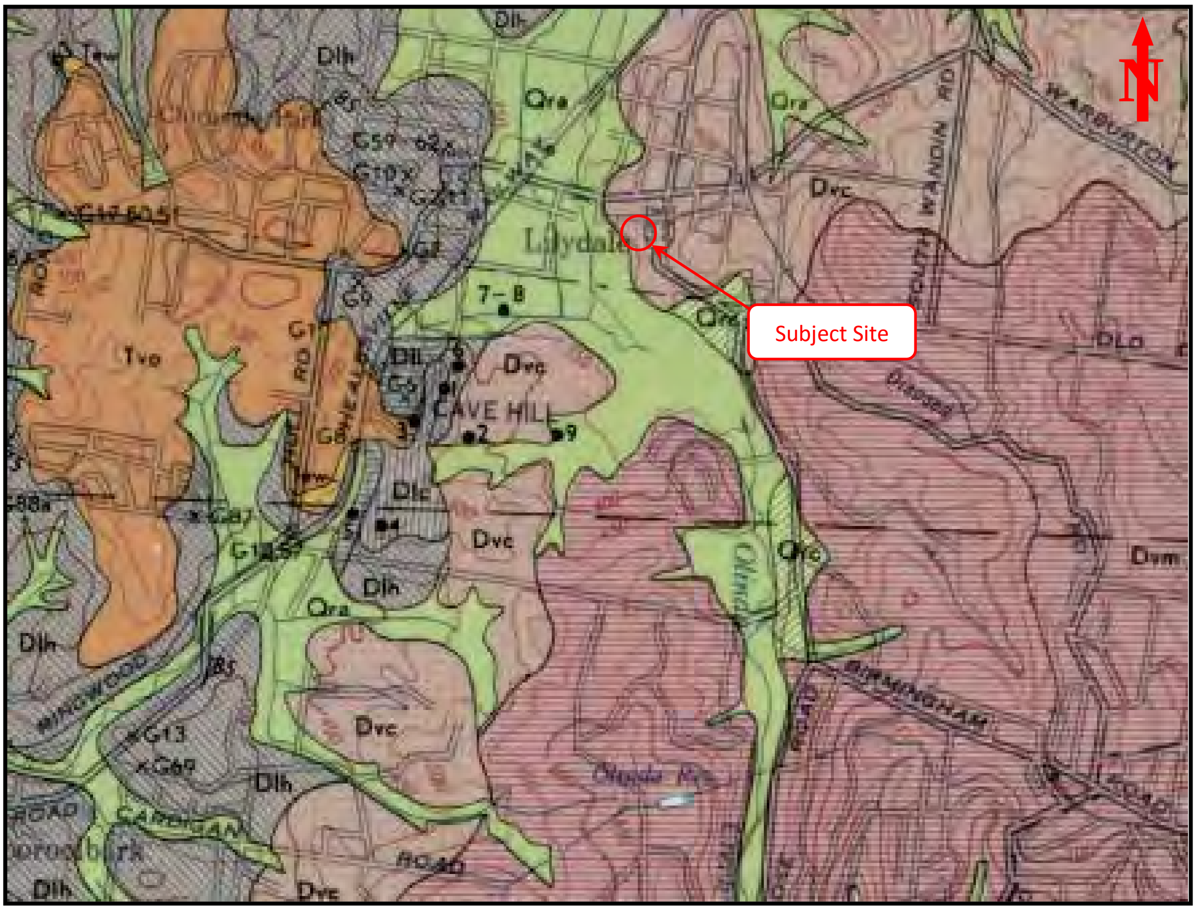
1.4 GEOLOGY

Reference to the Geological Survey of Victoria, 1:63,360 series, Ringwood sheet indicates the site to be located close to the contact between the following geological units:

- Quaternary age alluvial deposits. The alluvial clays are typically moderately to highly reactive, that is, they exhibit appreciable volumetric changes when subjected to changes in moisture content. Generally, the alluvial deposits have limited capacity as a founding stratum.
- Devonian age rhyolite, referred locally to as 'Coldstream Rhyolite'. The residual clays associated with weathering of the rhyolite are typically moderately to highly reactive, that is they exhibit appreciable changes in volume when subjected to changes in moisture content. The depth to rhyolite can vary significantly over short lateral distances and the degree of weathering of the rhyolite varies widely, ranging from medium to high plasticity clay in its completely weathered state to very high strength rock in its slightly weathered state.

The Quaternary age alluvial deposits are underlain at relatively shallow depth by the Coldstream Rhyolite. The Coldstream Rhyolite extends to depths in excess of those likely to be influenced by the proposed development.

An extract from the Geological Survey of Victoria, 1:63,360 series, Ringwood sheet is provided in Figure 1.4.1.



Legend (in the order of age)

Qra: Quaternary age low level alluvial deposits.

Qrc: Quaternary age fan and slump deposits, hillwash.

Tvo: "Older Volcanics" Tertiary age olivine and titanaugide basalt: Dense, deeply weathered.

Tew: "Werribee Formation" Tertiary age Sub-Older Volcanics: Gravels, gravelly sands and clays, poorly sorted.

Dvm: "Mount Evelyn Rhyodacite" of "Mount Dandenong Volcanics Group" Devonian age rhyolites and rhyodacites.

Dvc: "Coldstream Rhyolite" of "Mount Dandenong Volcanics Group" Devonian age dense rhyolite.

Dlc: "Cave Hill Sandstone" Devonian age quartz sandstone with horizons of sheared rounded quartz pebbles

Dll: "Lilydale Limestone Member" of "Humevale Formation" Devonian age well bedded bioclastic limestone.

Dlh: "Humevale Formation" Devonian age sedimentary deposits: Massive to thin bedded siltstones and sandstones.

FIGURE 1.4.1: Extract from the Geological Survey of Victoria, 1:63,360 Series, Ringwood Sheet

1.5 GROUND WATER TABLE

Reference to Visualising Victoria's Groundwater website (http://maps.ubspatial.com.au/vvg) indicates the depth of the ground water table is at the boundary between, 5 – 10 metres below the ground surface and 10 – 20 metres below the ground surface at the subject site.

Immediately to the north of the subject site, the depth of the ground water table is indicated to be less than 5 metres below the ground surface.

Reference to Visualising Victoria's Groundwater website (http://maps.ubspatial.com.au/vvg) indicates the depth of the ground water table to be 5 – 10 metres below the ground surface at the subject site.

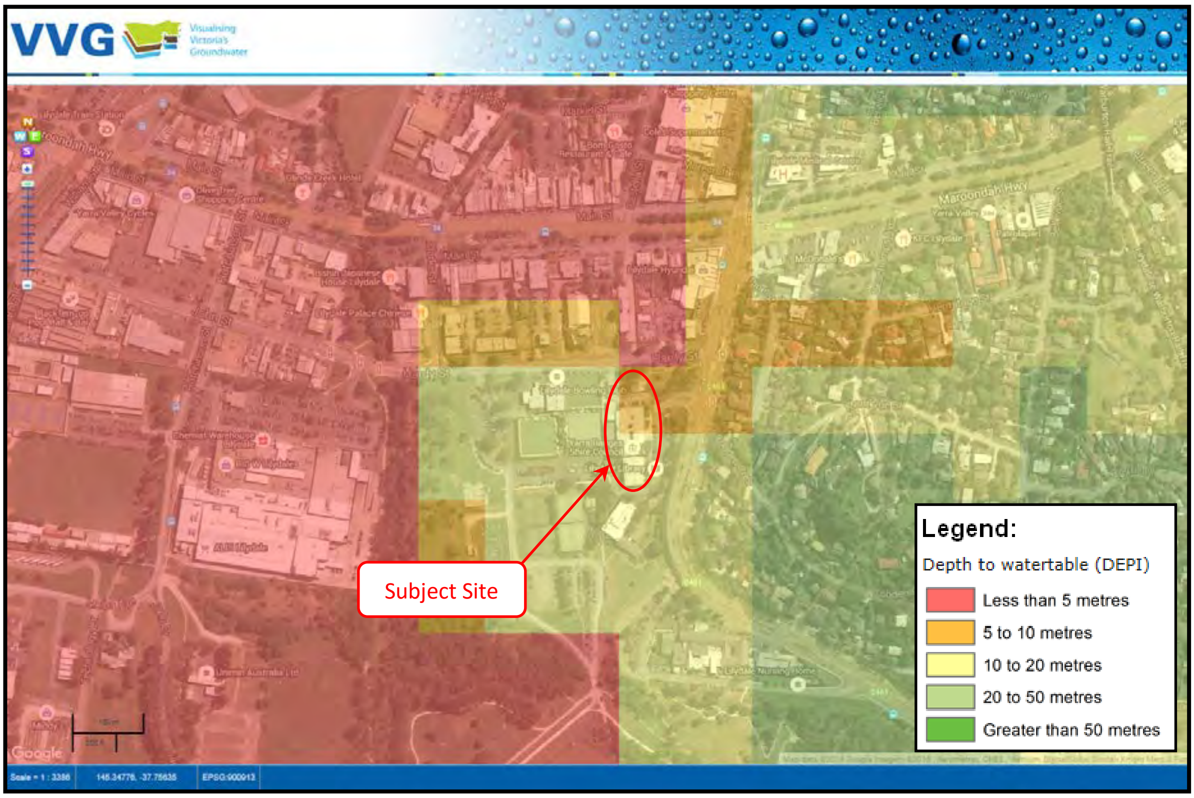


FIGURE 1.5.1: Screenshot from the Visualising Victoria's Groundwater Website.

2 INVESTIGATION METHODS

2.1 FIELD INVESTIGATION

Field investigation was completed under the direct supervision of a qualified Geotechnical Engineer from GeoAust on 22 – 24 and 30 March 2016 and included the following:

A total of ten boreholes were drilled at the subject site at the following locations:

- Five (5) boreholes were drilled to depths ranging between 2.56 and 11.23 metres below the existing ground surface within the plan area of the proposed office building addition at the north end of the site. The approximate locations of Boreholes 1 – 5 are indicated in the attached Figure 1.
- Five (5) boreholes were also drilled to depths ranging between 1.0 and 2.55 metres below the existing ground surface around the perimeter of the existing library building. The approximate locations of Boreholes 6 – 10 are also indicated in the attached Figure 1.

The presence of the existing building at the subject site precluded access with a drilling rig to parts of the site at the time of the site testing. Upon demolition and removal of the existing structure at the site, further site testing, comprising one additional borehole will need to be conducted at the south west corner of the plan area of the proposed office building addition to confirm the subsurface soil and rock conditions over the balance of the site.

Boreholes 1 – 5, 8 and 9 were drilled using a combination of a track mounted Comacchio MC405 rotary drilling rig and a truck mounted Comacchio MCT405 rotary drilling rig. The fill and residual soils were auger drilled and/or rotary wash bored to depths ranging between 1.0 and 9.03 metres below the existing ground surface. Boreholes 1 – 5 were extended into the underlying weathered rhyolite by way of continuous N.M.L.C diamond core drilling.

Due to restricted site access, Boreholes 6, 7 and 10 were drilled using portable hand auger equipment.

The logs of the boreholes were prepared in accordance with Australian Standard AS 1726 – 1993 ‘Geotechnical Site Investigations’. Definitions of the logging terms and symbols used are provided in Appendix A and the logs of the boreholes are provided in Appendix B.

Photographs of the rhyolite core recovered from Boreholes 1 – 5 are provided in Appendix C.

2.1.1 In-situ Testing

Testing was carried out in accordance with the relevant test procedures in Australian Standard AS 1289, 'Methods of Testing Soils for Engineering Purposes' and included the following:

- Vane shear strength testing of cohesive soils.
- Standard penetration testing.

Test results are included on the logs of the boreholes.

2.1.2 Temporary Ground Water Monitoring Standpipes

Two temporary PVC ground water monitoring standpipes with a diameter of 50 millimetres were installed in Boreholes 3 and 5 upon completion of drilling. The details of the standpipe construction are provided in Table 2.1.3.1.

TABLE 2.1.3.1: Details of Ground Water Monitoring Standpipes Installed in Boreholes 3 and 5

Test Location	Depth of Standpipe (metre)	Standpipe Type	Depth Interval of Screen (metre)	Depth Interval of Filter Pack (metre)	Depth Interval of Bentonite Seal (metre)
Borehole 3	6.1	Hand slotted 50mm diameter Class 9 PVC	3.1 – 6.1	1.5 – 6.1	0.0 – 1.5
Borehole 5	11.23	Hand slotted 50mm diameter Class 9 PVC	5.23 – 11.23	1.5 – 11.23	0.0 – 1.5

The standing water levels measured within the standpipes are provided in Section 3.3.

2.1.3 Footing Exposure

The footing which provides support to the perimeter wall of the existing library building at the subject site was exposed by manual excavation at Test Location 7. The approximate location of the footing exposure is indicated in the attached Figure 1 and the details of the footing, as exposed, are provided in Section 3.5.

2.2 LABORATORY TESTING

Laboratory testing was undertaken by the laboratory of Civil Geotechnical Services Pty Ltd. The laboratory is accredited by the National Association of Testing Authorities (NATA).

Testing was carried out in accordance with Australian Standard AS 1289, 'Methods of Testing Soil for Engineering Purposes' and included:

- 14 No. moisture content tests
- 4 No. Atterberg Limits tests
- 2 No. 4 day soaked CBR tests

The moisture content tests were performed on the following disturbed samples:

- Borehole 6, 0.4 – 0.5, 0.9 – 1.0, 1.4 – 1.5, 1.9 – 2.0 and 2.4 – 2.5 metres.
- Borehole 7, 0.4 – 0.5, 0.9 – 1.0, 1.4 – 1.5, 1.9 – 2.0 and 2.4 – 2.5 metres.
- Borehole 10, 1.1– 1.2, 1.4 – 1.5, 1.9 – 2.0 and 2.4 – 2.5 metres.

The Atterberg Limits tests were performed on the following disturbed samples of native clay:

- Borehole 5 1.5 – 2.0 metres
- Borehole 6, 1.4 – 1.5 metres
- Borehole 6, 1.9 – 2.0 metres
- Borehole 7, 1.5 – 1.6 metres

The soaked CBR tests were performed on composite samples of native clay. The composite samples were formed using the following disturbed samples of native clay:

- Composite Sample A: Borehole 1, 0.38 – 1.2 metres
  Borehole 2, 0.9 – 1.6 metres
  Borehole 3, 0.4 – 1.2 metres

- Composite Sample B: Borehole 4, 0.45 – 1.1 metres
  Borehole 5, 0.4 – 1.5 metres
  Borehole 6, 1.5 – 1.9 metres

The CBR specimens were remoulded to 98% of the Standard maximum dry density ratio in accordance with Australian Standard AS 1289 5.1.1.

The results of the laboratory tests are provided in Appendix D and are summarised in Section 3.4.

In addition to the testing completed by Civil Geotechnical Services Pty Ltd, point load strength index testing was carried out by GeoAust on the core samples of rhyolite recovered from Boreholes 1 – 3. The results of the point load strength index testing are also presented in Section 3.4.

3 RESULTS OF INVESTIGATION

3.1 SITE DESCRIPTION

The following site features were noted at the time of the field investigation:

- The site was located on a gently to moderately sloping south west facing hillside.
- The site fronted Anderson Street to the east and Hardy Street to the north.
- There was a bowling club to the west of the subject site.
- The site was occupied by an existing one and two storey building of masonry construction, which appeared to have been constructed in stages over several decades. The existing building included a lower ground floor level beneath part of the building. It was understood that it is proposed to demolish the north end of the existing structure to make way for the proposed new addition extending to the north side of the existing building.
- An appreciable site cut, with an estimated maximum depth of approximately 2.0 metres, had been carried out to accommodate the lower ground floor level.
- Based on a cursory external and internal inspection of the subject building it was noted that parts of the existing structure were in fair to poor condition, with minor to moderate cracking of walls, resulting from differential settlement of the footings that provide support to the structure.
- Based on information provided to GeoAust, it was understood that there has been a history of numerous pipes connecting to the subject building having leaked and or ruptured at various times over the life of the subject structure. Inspection of the subfloor space behind the lower ground floor area indicted the presence of a broken pipe which had previously discharged a substantial volume of water over the face of the site cut causing appreciable erosion of the soil profile.
- A short distance to the north of the existing municipal office building there was small single storey freestanding brick building, which was being used as a call centre. It was understood that it is proposed to demolish the building to make way for the proposed new addition extending to the north side of the existing municipal building.
- The buildings at the subject site were surrounded by areas of light duty concrete paving, areas of asphaltic concrete paving, areas of lawn and garden beds.
- There were numerous small to very large sized trees scattered at the subject site, many of them located with close proximity to the buildings at the site. The Nearmap aerial image of the site (www.nearmap.com) taken on 5 February 2016, which has been reproduced in the attached Figure 1, shows the locations and canopy sizes of the trees at, and adjacent to, the subject site.

3.2 SUBSURFACE CONDITIONS

The logs of Boreholes 1 – 10 are provided in Appendix B. The subsurface conditions encountered within the boreholes are summarised in Table 3.2.1.

TABLE 3.2.1: Summary of Soil and Rock Profile Encountered in Boreholes 1 – 10

Borehole Number	Depth of Existing Pavement (metre)	Depth of Fill (metre)	Depth of Silt (metre)	Depth of Clay (metre)	Depth of Weathered Rhyolite (metre)
1	0.0 – 0.025	0.025 – 0.6	Nil Present	0.6 – 5.5	5.5 – 9.07+
2	Nil Present	0.0 – 0.9	Nil Present	0.9 – 5.7	5.7 – 8.55+
3	0.0 – 0.36	Nil Present	Nil Present	0.36 – 1.25	1.25 – 6.1+
4	0.0 – 0.3	Nil Present	0.3 – 0.45	0.45 – 1.25	1.25 – 2.56+
5	0.0 – 0.05	0.05 – 0.4	Nil Present	0.4 – 8.7	8.7 – 11.23+
6	Nil Present	0.0 – 1.1	1.1 – 1.4	1.4 – 2.5+	Not Encountered
7	Nil Present	0.0 – 1.15	1.15 – 1.5	15 – 2.55+	Not Encountered
8	0.0 – 0.28	Nil Present	Nil Present	Nil Present	0.28 – 1.0+*
9	0.0 – 0.18	0.18 – 0.5	0.5 – 0.65	0.65 – 1.1	1.1 – 1.5+
10	Nil Present	0.0 – 0.4	0.4 – 1.1	1.1 – 2.5+	Not Encountered

* Denotes effective auger refusal on high strength rhyolite with tungsten carbide spiral drill bit.

A brief description of the soil and rock layers encountered within the boreholes is given below:

EXISTING PAVEMENT: The existing pavement typically comprised a 20 – 80 millimetre thick layer of asphaltic concrete underlain by fine to coarse grained crushed rock which appeared to be well compacted. However, at the locations of Boreholes 1 and 5 there was no crushed rock underlying the layer of asphaltic concrete.

FILL: The fill comprised a mixture of fine to medium grained silty sand and low to medium plasticity silt and clay which contained varying quantities of fine to coarse grained sand and gravel. At the location of Borehole 1, the fill included cobbles at depths in excess of approximately 0.5 metres below the existing ground surface.

SILT TOPSOIL: The clayey silt was part of the original topsoil layer at the site. The silt was of low to medium plasticity and predominantly of very stiff to hard consistency. However, in Borehole 4, the clayey silt had been softened by moisture ingress to firm to stiff consistency.

The silt was assessed to be of extremely poor quality from an engineering perspective, in that it is prone to significant loss of strength upon moisture ingress. The silt will be completely unworkable upon saturation.

CLAY: The clay was of medium to high plasticity, meaning that it will be subject to significant volumetric changes upon changes in moisture content. Upon moisture ingress the clay will swell and conversely, upon drying out the clay will shrink.

The clay was generally of very stiff to hard consistency. However, in Boreholes 1, 4 and 5, the clay at shallow depths had been softened by moisture ingress to stiff consistency, as noted on the logs of the boreholes. At depths in excess of those softened by moisture ingress, the clay was of very stiff to hard consistency.

WEATHERED RHYOLITE: The rhyolite was predominantly distinctly weathered and of high to very high rock strength.

The rhyolite was fine grained and highly to moderately fractured with fragmented zones. The fractures were smooth, planar to undular, clean and stained by iron oxide. Some of the fractures were infilled with clay seams of up to 150 millimetres thick, as noted on the logs of the boreholes.

Defect spacings were variable within the rhyolite with rock quality designations (RQD) varying between 0 and 100%. A summary of RQD values for rhyolite in individual boreholes is provided in Table 3.2.2.

TABLE 3.2.2: Summary of Rock Quality Designation Values for Rhyolite in Boreholes 1 – 5

Borehole Number	Minimum RQD Value (%)	Maximum RQD Value (%)	Average RQD Value (%)
Borehole 1	0	100	51
Borehole 2	0	72	46
Borehole 3	0	0	0
Borehole 4	0	0	0
Borehole 5	0	0	0

A number of core losses occurred within the rhyolite during drilling. The losses are likely to have occurred within zones of extremely weathered rhyolite, which was of extremely low rock strength and/or residual clay.

It must be noted that the depth to rhyolite and the weathering properties of the rhyolite can vary significantly over short lateral distances. It is unlikely that the boreholes drilled at the site have intersected either the minimum or maximum depth to rhyolite at the subject site. Similarly, it is unlikely that the boreholes have encountered the extremes in weathering and rock strength of the rhyolite underlying the site.

3.3 GROUND WATER

Ground water seepage was not intersected during auger drilling of Boreholes 1 – 10 or observed a short time after completion of auger drilling. Auger drilling within Boreholes 1 – 5 extended to a maximum depth of 6.07 metres below the existing ground surface. The introduction of water for rotary wash boring and NMLC diamond core drilling negated any further meaningful observation of ground water seepage during drilling below the augered depths.

Two temporary PVC ground water monitoring standpipes with a diameter of 50 millimetres were installed in Boreholes 3 and 5 upon completion of drilling. The construction details of the ground water monitoring standpipes are provided in Section 2.1.3.

The standing ground water levels measured within the temporary ground water monitoring standpipes installed in Boreholes 3 and 5 are provided in Table 3.3.1.

TABLE 3.3.1: Standing Water Levels Measured within the Standpipes Installed in Boreholes 3 and 5

Test Location	Date of Reading	Depth of Standing Water Level Below Ground Surface (metre)
Borehole 3	18 April 2016	1.3
Borehole 5	18 April 2016	7.58

The standing water level measured within the standpipe installed in Borehole 3 is considerably shallower than anticipated. The reason for the elevated standing water level within Borehole 3 has not been able to be ascertained as part of the site testing which has been completed to date. However, it may possibly be as a consequence of one or more leaking underground pipes at, and/or adjacent to, the subject site.

Based on our experience of conditions in the general area, the standing water level recorded within the standpipe installed in Borehole 3 is anticipated to correspond to the regional ground water table at the subject site.

Whilst not encountered at the time of the site investigation, it should be noted that ephemeral flows of perched ground water seepage may develop within the fill and near surface silt overlying the less permeable clay following periods of wet weather, particularly during the winter and spring months when rainfall rates are typically high and evaporation levels are low. The fill and near surface native soils are anticipated to be unstable and completely unworkable when saturated.

3.4 LABORATORY TESTS

The laboratory test results are given in Appendix D of this report. A summary of the test results is provided in Figure 3.4.1 and Tables 3.4.1 and 3.4.2.

The results of the moisture content tests have been summarised in Figure 3.4.1.

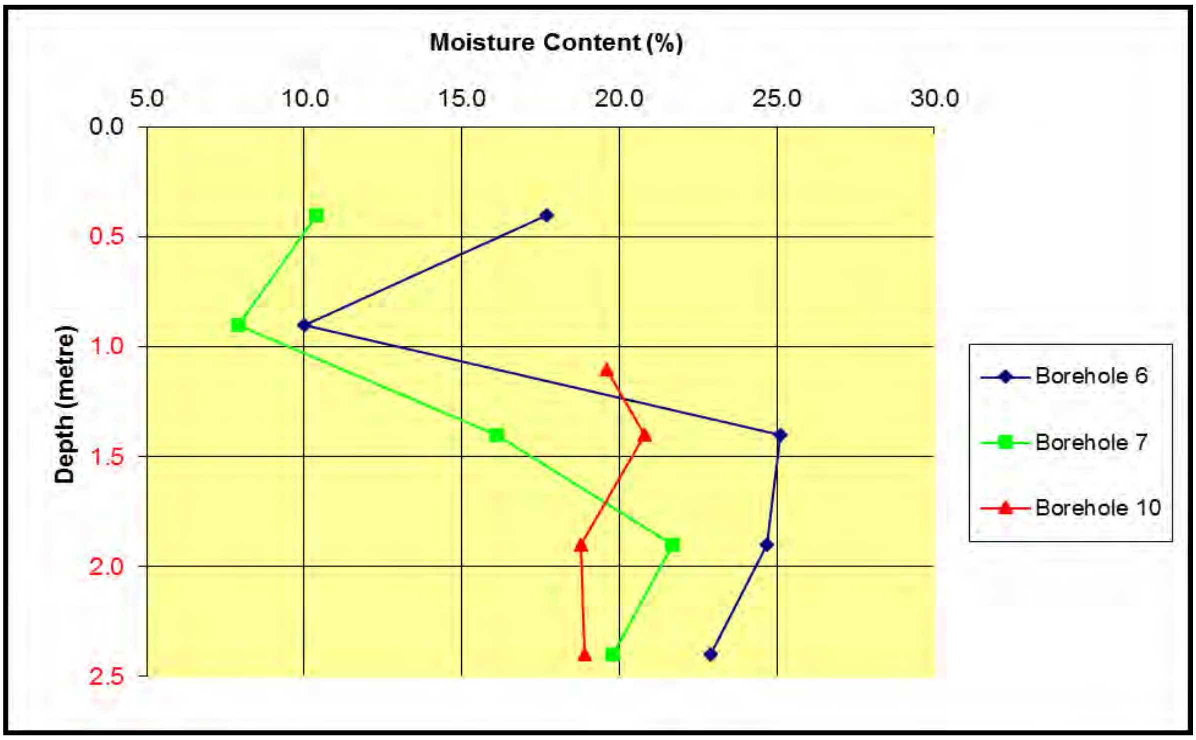


FIGURE 3.4.1: Moisture Content Test Results from Boreholes 6, 7 and 10

The moisture content tests indicate variable moisture content levels within the clay profile underlying the subject site both laterally between the boreholes and vertically within each of the boreholes.

By comparing the moisture contents of the native clay samples in Borehole 6 with those of Boreholes 7 and 10, it can be seen that the moisture content values in Borehole 6 are appreciably higher than the corresponding moisture contents in Boreholes 7 and 10. Even at a depth of 2.4 metres below the existing ground surface the moisture content in Borehole 6 is 4.0% higher than the corresponding moisture content in Borehole 10. Given the proximity of the tree to the location of Borehole 6 it would be expected that the moisture contents in Borehole 6 should be appreciably lower than the moisture contents in Borehole 10. The elevated moisture contents in Borehole 6 are indicative of a long term source of moisture (leaking pipe) in the vicinity of Borehole 6 that has led to deep seated moisture ingress of the residual clay profile.

A summary of the Atterberg limits test results is provided in Table 3.4.1.

TABLE 3.4.1: Summary of Atterberg Limits Test Results.

Borehole	Sample Depth	Material Type	LL	PL	PI	LS
	(*m*)		(%)	(%)	(%)	(%)
5	1.5 – 2.0	Native Clay	52	19	33	12.0
6	1.4 – 1.5	Native Clay	78	23	55	18.0
6	1.9 – 2.0	Native Clay	81	23	58	20.0
7	1.5 – 1.6	Native Clay	56	20	36	15.5

The results of the Atterberg Limit tests plot in the region of inorganic clay of high plasticity on the Unified Soil Classification System Plasticity Chart and are consistent with experience of conditions in the general area.

The results of the Atterberg Limit tests confirm that the clays underlying the subject site will experience significant changes in volume when subjected to changes in moisture content. Upon wetting the clay swells and conversely upon drying the clay shrinks.

In considering the results of both the moisture content tests and the Atterberg limits test results it is apparent that the external factors, which have led to appreciable deep seated moisture content variations within the high plasticity residual clays underlying the subject site (leaking pipes and trees), have had an appreciable effect on the clay founding stratum. The variations in the moisture content of the clay founding stratum have led to appreciable volumetric changes within the clay founding stratum, which in turn has resulted in differential settlements between those parts of the subject building where the footings are founded on clay and those parts where the footings are founded on weathered rhyolite at the base of the site cut.

A summary of the soaked CBR test results is provided in Table 3.4.2.

TABLE 3.4.2: Summary of Soaked CBR Test Results

Sample ID	Material Type	MDD	OMC	Swell after 96 hour soak period	CBR
		(t/m^3)	(%)	(%)	(%)
Composite Sample A	Native Clay	1.46	29.0	2.0	2.5
Composite Sample B	Native Clay	1.50	26.5	3.0	2.0

The laboratory soaked CBR tests completed on the samples of clay, which were compacted to 98% Standard compaction, produced low values of 2.0 and 2.5% and confirm the need for appropriate care to be taken in the design and construction of the proposed pavements at the subject site. Subgrade improvement is generally considered necessary to ensure satisfactory performance of pavements for soaked CBR values less than 3.0%.

In considering the results of the soaked CBRs it should be noted that the clay samples swelled by as much as 3.0% during the 96 hour soak period. This confirms the high plasticity of the clays underlying the subject site.

In addition to the testing completed by Civil Geotechnical Services Pty Ltd, point load strength index testing was carried out by GeoAust on the core samples of rhyolite recovered from Boreholes 1 – 3. The results of the point load strength index testing are summarised in Table 3.4.3.

Table 3.4.3: Summary of Point Load Strength Index Test Results.

Borehole Number	Sample Depth (metre)	Material Type	Is(50)	Rock Strength
1	6.0	Rhyolite	1.84	H
1	6.35	Rhyolite	2.17	H
1	7.2	Rhyolite	2.71	H
1	8.0	Rhyolite	3.14	VH
1	8.4	Rhyolite	6.92	VH
2	6.3	Rhyolite	0.75	M
2	6.7	Rhyolite	0.85	M
2	7.05	Rhyolite	7.44	VH
2	8.2	Rhyolite	3.64	VH
3	2.56	Rhyolite	1.63	H
3	4.43	Rhyolite	0.45	M
3	4.67	Rhyolite	4.28	VH
3	5.4	Rhyolite	5.03	VH

3.5 EXISTING FOOTING

Figure 3.5.1 provides a summary of the footing geometry and founding conditions of the footing which provides support to the perimeter wall of the existing library building at the subject site, as exposed at Test Location 7.

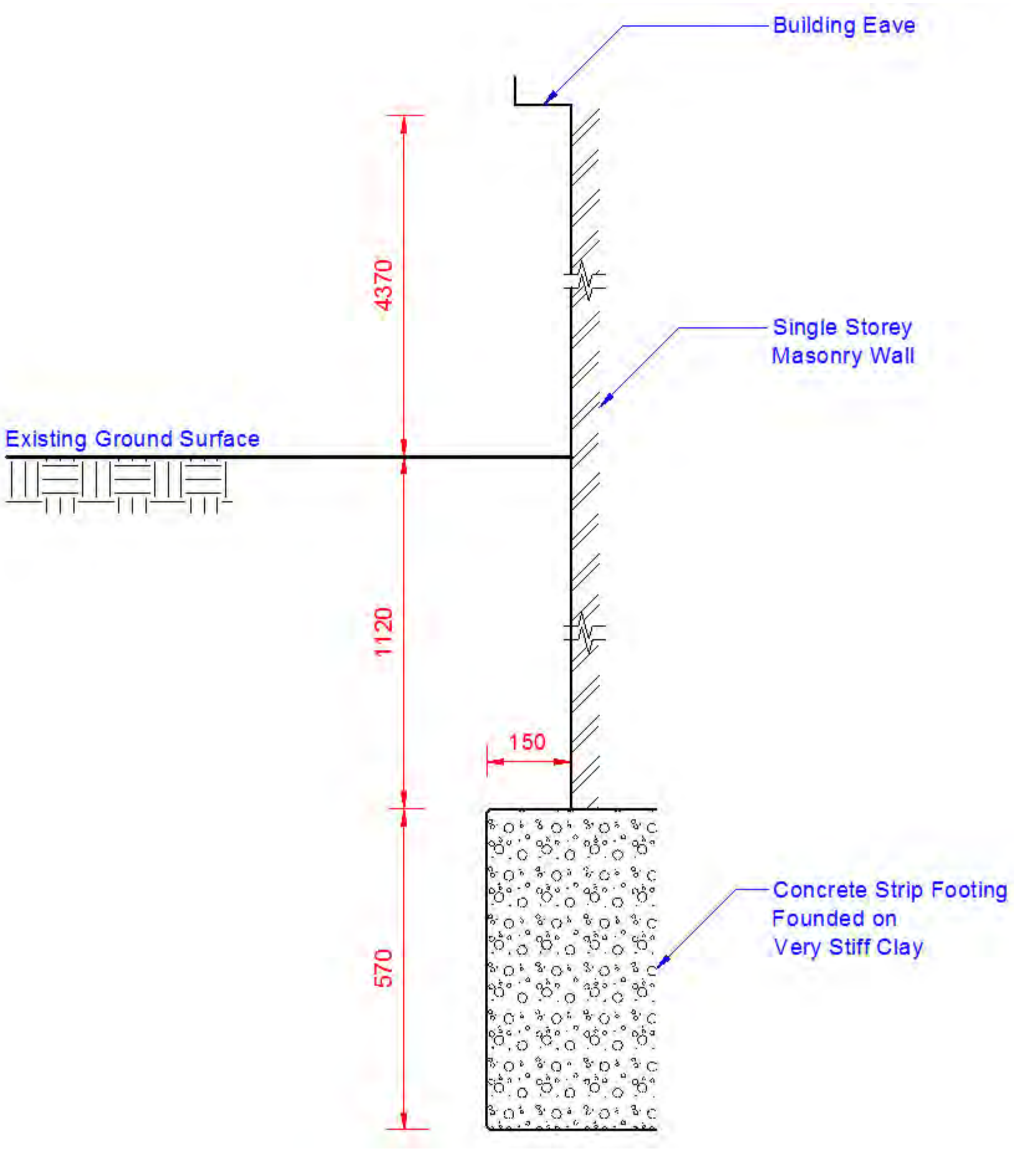


FIGURE 3.5.1: Summary of Existing Footing Geometry and Founding Conditions at Test Location 7

4 COMMENTS AND RECOMMENDATIONS

4.1 STAGE 1 REPORT

The following comments and recommendations have been based on a limited amount of field testing, which does not provide coverage of the entire site for the proposed development. The comments and recommendations of this report may require revision once additional geotechnical testing has been conducted at the site. The comments and recommendations of this report must not be used for final structural design and construction. Additional testing will be conducted at the site once site access becomes available.

Detailed architectural and structural plans of the proposed development were not available at the time of this report being issued. It has been assumed that the construction will be typical of low-rise reinforced concrete framed commercial structures and no unusual performance criteria apply to the proposed addition. Given these assumptions the comments and recommendations of this report may require revision once structural design has progressed.

4.2 SITE CLASSIFICATION

Classification of the site has taken into account the following:

- Identification of the sub-soil profile
- Field classification of soil type and plasticity
- The moisture content regime of the soil profile
- Depth of fill

The site has been classified as ‘Class P’ in accordance with Australian Standard AS 2870 – 2011, ‘Residential Slabs and Footings’ due to the following:

- The depths of uncontrolled fill underlying the site.
- The disturbance of the soil profile that is anticipated to result from the demolition of the existing structures at the site.
- The variation in the moisture content regime of the moderately to highly reactive clay profile in conjunction with the presence of a number of trees at, and adjacent to, the site.

4.3 EARTHQUAKE SITE CLASSIFICATION

Australian Standard AS 1170.4 – 2007, 'Structural Design Actions, Part 4: 'Earthquake Actions in Australia' outlines the methods for assigning the site's sub-soil class.

Based on the subsurface conditions encountered at the subject site, and the requirements of Table 4.1 'Maximum Depth Limits for Sub-soil Class C' and Figure 3.2(A) 'Hazard Factor (Z) for Victoria' of the Standard, it is recommended that the following Hazard Factor and Sub-Soil Class are adopted:

- Sub-soil Class: Class C_e – Shallow Soil Site
- Hazard Factor (Z): 0.09

4.4 STRUCTURAL DISTRESS WITHIN EXISTING BUILDING

4.4.1 Likely Causes of Structural Distress

The subject site is underlain by high plasticity clay soils which undergo significant changes in volume when subjected to changes in moisture content. Upon wetting the clays swell appreciably and conversely upon drying the clays shrink. Under normal conditions, where there are no appreciable external wetting or drying influences, a structure, which is constructed on a standard footing arrangement, will largely accommodate the anticipated volumetric changes, which typically occur within the clay between summer and winter. However, the volumetric changes that have occurred at the subject site have exceeded those able to be accommodated by the subject structure, resulting in the observed distress at various locations throughout the subject structure.

In accordance with Figure D1 of Appendix D in Australian Standard 2870 – 2011, 'Residential Slabs and Footings', the subject site is located within Climatic Zone 2, where seasonal variation of temperature, humidity and rainfall influence the moisture condition of the soil profile to a depth of at least 1.8 metres below the existing ground surface. External factors will influence the moisture condition to greater depths. This is demonstrated by the significant variations in the moisture content of the clay between the boreholes at a depth of 2.4 metres below the existing ground surface.

Based on the results of the testing carried out the following factors are likely to have significantly influenced the performance of the footings at the subject site:

- By current standards the existing strip footing, which was exposed at Test Location 7, is considered to be completely inadequate. Australian Standard AS 2870 – 2011 'Residential Slabs and Footings – Construction' specifies a minimum strip footing depth of 1.1 metres for articulated masonry construction (single storey structure) on a highly reactive (Class H1) site.

- Australian Standard AS 2870 – 2011 does not allow the use of brick walls which are not articulated or exceeding one storey in height on a highly reactive (Class H1) site.

- Based on information provided to GeoAust, it was understood that there has been a history of numerous pipes, which connect to the subject building, having leaked and/or ruptured at various times over the life of the subject structure. The elevated moisture contents in Borehole 6 are indicative of a long term source(s) of moisture (leaking pipe) in the vicinity of Borehole 6 that has led to deep seated moisture ingress of the residual clay profile. The presence of uncontrolled water ingress into the high plasticity clay will lead to appreciable heaving of the clay. The pressures exerted by heaving clay are in excess of those able to be accommodated by the structure.

- The numerous trees located within close proximity to the subject building have had an appreciable effect on the clay founding stratum. Individual trees located within 1.0 times their mature height of footings are recognised as being capable of causing settlement related damage to structures in high plasticity clays. For trees in group plantings this distance extends up to 2.0 times the mature heights of the individual trees. The numerous small to large sized trees located immediately adjacent to the subject building are therefore well capable of having caused the damage observed within the structure.

4.4.2 Remedial Measures

Based on the testing completed, we are able to provide the following advice with regard to the stability of the footings which provide support to the existing structure:

- Based on the conditions encountered in Boreholes 6 – 10, the footings which provide support to the existing structure are not at risk of failing in bearing.

- The rate of settlement of the footings which provide support to the subject structure is not expected to accelerate in the short to medium term unless the site conditions are varied significantly from those which prevailed at the site at the time of the site investigation.

Given the level of structural distress to the subject building, it is strongly recommended that a Structural Engineer should be engaged on an ongoing basis to assess the structural condition of the subject building. In the event that the level of structural distress increases appreciably it may be necessary to stabilise/reconstruct sections of the building in order to ensure stability of the structure.

When considering remedial measures for the subject structure it must be appreciated from the outset that the footings which provide support to the existing structure have proven to be inadequate in relation to the prevailing site conditions. It will therefore not be possible to stop future movements within the structure. Any remedial measures are at best aimed at reducing future movements to more acceptable levels. It may well be necessary to carry out periodic repairs to the structure in the future.

4.4.3 Stabilisation of Moisture Content Regime

If underpinning of the subject structure is to be avoided, the following items must be addressed in an effort to stabilise the moisture content regime within the clay founding stratum:

- All trees in the immediate vicinity of the subject building must be removed without delay. All individual trees within 1.0 times their mature height of the subject building and all trees within a group planting that are located within 2.0 times their mature height of the subject building must be removed. No additional trees should be planted at, or adjacent to, the subject site.
- All services connecting to the structure must be checked for leaks and blockages. For non-pressurised services such as sewer and stormwater pipes it will be necessary to locally block sections of the pipe and monitor water losses within the filled sections of pipe. The check for leaking services must include the roof drainage, below ground pits and all sewer and stormwater pipes within the general vicinity of the subject structure. Any leaking pipes, no matter how minor, must be repaired immediately. Suitably flexible couplings must be incorporated into any new sections of plumbing to ensure that the pipes can accommodate any possible future movements without being damaged. Failure to eliminate any concentrated sources of the moisture is anticipated to cause ongoing additional damage to the subject structure.
- The surface drainage around the perimeter of the structure must be checked to ensure that water is able to freely shed away from the structure to a legal point of discharge. Under no circumstances shall water be permitted to pond on the ground surface within at least 3 – 4 metres from the perimeter of the subject structure.

Upon carrying out the above remedial measures, the performance of the structure will need to be accurately monitored for at least 24 months. This will allow the moisture regime of the highly plasticity clays underlying the subject building to stabilise. If movements have significantly reduced and are considered acceptable, appropriate repairs may be made to the structure.

4.4.4 Underpinning of Strip Footings

If it is not possible to implement one or more of the remedial measure detailed in Section 4.4.3, or alternatively, if appreciable continuing movements are observed within the subject structure some 24 months after efforts have been made to stabilise the moisture content regime of the clay founding stratum, it will be necessary to underpin the subject structure to a stable founding stratum.

In considering underpinning as a means of stabilising footing movements within the subject building it must be recognised, that whilst underpinning of isolated problem areas will often stabilise the distressed portion of the structure being treated, it in itself may lead to some cracking of sections which are currently in relatively good repair. Underpinning should therefore be extensive rather than localised, in order to minimise future foundation related movements. Alternatively, as a compromise solution, full height articulation must be introduced into the brickwork at all points where the underpinning is terminated. A suitably qualified Structural Engineer will need to be consulted to determine the most suitable locations of full height articulation joints.

It is essential to prevent moisture ingress down to the base of the underpins. The backfill to the front of the underpins must comprise of lean mix concrete or a low permeability proprietary backfill product. The use of the site derived clay must not be considered for use as backfill to the front of the underpins. Compaction of clay within a confined excavation is highly problematic. If the clay is not properly compacted it will allow moisture ingress at the base of the underpins, which will result in future footing movements.

Additional geotechnical testing will need to be carried out before recommendations for the design of underpins can be provided. However, as a guide, it is anticipated that the underpins will need to be founded at a depth of at least 3.0 metres below the existing ground surface in order to be effective, subject to refusal on weathered rhyolite.

The underpinning arrangement will need to be designed by a suitably qualified Structural Engineer.

4.5 NEW FOOTINGS FOR PROPOSED OFFICE ADDITION

Best performance of the proposed structure will be achieved by adopting a uniform footing arrangement and founding depth throughout. Differential settlements may potentially be problematic where more than one footing system or variable founding depths are adopted for the proposed structure.

The presence of moisture softened and highly reactive clays underlying the subject site together with the presence of numerous trees at, and adjacent to, the subject site, precludes the use of shallow footing arrangements founded on clay for the support of the proposed structure at the subject site. It is anticipated that the use of shallow footings founded on clay will result in poor performance of the proposed structure. It will be necessary to found all footings for the proposed structure on the weathered rhyolite rock at the base of any clay. At locations where the depth to the weathered rhyolite exceeds approximately 1.5 metres below the finished ground surface it is anticipated that it will be more economical and practicable to suspend the structure on a series of bored piles which are socketed into the weathered rhyolite. However, the construction of bored piles socketed into the weathered rhyolite must take into account the high to very high strength of the rhyolite. The very high strength rhyolite will necessitate the use of a high capacity drilling rig equipped with a rock coring bucket and the rate of coring will be extremely slow.

It must be noted that full height construction joints must be provided between the existing structure and the new addition which is fully suspended on footings founded on weathered rhyolite rock.

4.5.1 Pad and Strip Footings Founded on Rhyolite

Pad and strip footings must be founded on the weathered rhyolite at the base of any clay. It must be ensured that the footing excavations expose a minimum 80% rhyolite rock with the remainder being very stiff clay. Any clay must be distributed uniformly across the exposed founding stratum. Care must be taken to clean footing excavations of any loose rhyolite boulders or clay softened by moisture ingress. Pad and strip footings may be designed on the basis of the maximum allowable bearing pressures given in Table 4.5.1.1.

TABLE 4.5.1.1: Maximum Allowable Bearing Pressures for Spread Footings Founded on Rhyolite

Founding Material	Maximum Allowable Bearing Pressure (kPa)	
	Pad Footing	Strip Footing
Weathered Rhyolite	600	400

Structural requirements will govern footing geometry and reinforcement requirements and soil reactivity need not be considered in the design of footings founded on rhyolite. However, a minimum embedment of 0.8 metres below the finished ground level is recommended.

Footing excavations must be dry and free of any loose or softened material prior to pouring concrete. Assuming that footing excavations are free of loose material, the likely total settlements under the above pressures are estimated to be less than 0.5% of the footing width. Differential settlements are expected to be approximately half of the total settlement value. These values will be exceeded where the footing excavations are not properly cleaned.

In order to negate the need for temporary shoring during construction it is recommended that footing excavations are backfilled with mass concrete to the underside of the structural footings as soon as the base of footing excavations have been cleaned and approved. Under no circumstances shall any person enter an unshored footing excavation with a depth exceeding 1.5 metres.

Pad and strip footing excavations must be inspected by a qualified engineer prior to the placement of concrete to ensure that the founding conditions are consistent with the design recommendations. In the event that the design recommendations are not met it may be necessary to either increase the founding depth of the footings or alternatively increase the plan area of the footings.

4.5.2 Bored Pile Footings

Bored piles must be socketed into the distinctly weathered rhyolite of very high rock strength, subject to the following minimum founding conditions:

- The length of pile embedment must not be less than 3.0 metres below the ground floor level.
- The embedded length of pile must exceed 3.0 times the pile diameter.
- The pile should penetrate at least 2.0 pile diameters into distinctly or less weathered rhyolite of very high rock strength.
- Pile spacings should exceed 2.5 pile diameters to ensure that full side adhesion is available for the pile sockets.
- At least 60% of the pile load should be provided by side resistance.

Bored piles socketed into the weathered rhyolite will derive capacity from a combination of side shear and base resistance. The minimum required socket length for a given load at a particular pile location will be dependent on the profile of rock quality at each pile location, roughness of the walls of the socket excavation and cleanliness of the base of the socket.

Socket roughness and cleanliness are influenced by pile construction and cleaning methodology. Additional roughening and cleaning of the pile socket is likely to be required after drilling. Once pile loads, sizes and construction methodology are determined, individual sockets may be designed.

It is recommended that the rock profile at each pile location is logged by a suitably experienced engineer at the time of bored pile excavation to ensure that variations in rock strength and the roughness of the socket be carefully monitored to ensure that an adequate socket length is provided.

In accordance with Australian Standard AS 2159 – 2009 'Piling Design and Installation' the geotechnical strength reduction factor is influenced by the scope of geotechnical investigation and means of determining/selecting geotechnical design parameters, the design methodology, construction controls and the method and extent of pile testing.

Piling contractors will need to make an assessment of a suitable geotechnical strength reduction factor for pile design once all the weighting factors and individual risk factors in Table 4.3.2(A) of Australian Standard AS 2159 – 2009 have been taken into consideration, together with any increase in the geotechnical strength reduction factor associated with any testing of the bored piles that is proposed.

Adopting a geotechnical strength reduction factor of 0.56 for preliminary design of bored piles and applying a load factor of 1.35, the pressures given in Table 4.5.2.1 are recommended for the preliminary design of the bored piles socketed into the weathered rhyolite of very high rock strength.

TABLE 4.5.2.1: Base and Socket Shear Resistances for Bored Piles Socketed into rhyolite

Founding Material	Design Geotechnical Pressure (kPa)		Working Pressure (kPa)	
	Base Resistance	Socket Shear	Base Resistance	Socket Shear
Distinctly or less weathered rhyolite (Very High Strength)	2,700	220	2,000	160

Side adhesion may be applied only to that portion of bored piles founded within rhyolite at penetration depths exceeding 1.5 pile diameters.

Assuming a load factor of 1.35 and that the bases of pile excavations are free of loose material and sufficient roughness of the pile sockets is provided, the settlement at the top of the pile socket under working load is estimated to be approximately 1% of the pile diameter. Elastic shortening of the pile above the top of the socket must be added to this settlement.

Differential settlements between adjacent piles are expected to be approximately half of the total settlement value. These values will be exceeded where the base of the pile excavations are not suitably clean. If cleaning of the pile bases proves problematic it may be necessary to reduce the contribution of the pile base to total pile capacity.

4.5.3 Construction of Bored Piles

Construction of bored piles will need to take into account the following:

- The presence of ground water at depth in excess of 7.5 metres below the existing ground surface.
- The presence of high to very high strength rhyolite will necessitate the use of high capacity piling rig equipped with a rock coring bucket. The rate of coring will be extremely slow.

Socket roughness and cleanliness will significantly influence the load carrying capacity and settlement characteristics of the piles. Failure to remove any smeared clay from the sides of the pile sockets will result in both the pile load capacity not being achieved and excessive settlement of the piles. Both socket roughness and cleanliness are influenced by pile construction and cleaning methodology. Additional roughening and cleaning of the pile sockets is likely to be required after drilling. If the pile sockets cannot be adequately cleaned and adequately roughened it may be necessary to reduce the socket resistance component of the piles in the assessment of the pile capacities.

The pile bases must be cleaned of all loose material using a suitable cleaning bucket. The use of a rock coring bucket or toothed auger is completely unacceptable for cleaning pile bases. Given that at least some of the bored piles will extend below the local ground water table level, cleaning of the pile bases may be difficult. If the bases of the piles cannot be thoroughly cleaned it may be necessary to reduce the base resistance component of the piles in the assessment of the pile capacities.

The pile excavations should be completely dewatered prior to pouring concrete. If ground water seepage cannot be adequately controlled it will be necessary to use a suitable concrete mix, which can be placed below water. The concrete will need to be poured using a tremie pipe and a minimum 2.0 metre depth of concrete maintained above the tremie outlet throughout the pour to maintain plug flow. The finished level of concrete placed should be higher than the design level to allow removal of the anticipated thick layer of laitance which forms on the rising surface of concrete poured below the ground water table using tremie methods.

Drilling of piles, roughening, base cleaning and placement of concrete should be completed as a continuous operation without delay.

Bored pile excavations must be inspected by a qualified engineer prior to the placement of concrete to ensure that the founding conditions are consistent with the above recommendations. If conditions are not consistent with the above recommendations it may be necessary to either increase the founding depth and/or diameter of the bored piles.

4.6 EXCAVATION

4.6.1 Excavation Conditions

The surface fill and underlying native silt and clay should be readily excavated using a medium capacity excavator fitted with a toothed bucket. However, the presence of rhyolite cobbles and boulders (‘corestones’) within the residual clay must be noted. The rhyolite corestones can be quite large and their occurrence within the residual clay can be random. The presence of large rhyolite corestones within the clay profile will result in difficult excavation conditions.

Efficient excavation of the very high strength rhyolite will require the use of a high capacity excavator equipped with a combination of a hydraulic rock breaker and ripping tyne to loosen the rhyolite prior to excavation. Excavation into the very high strength rhyolite is anticipated to be very slow. An allowance for some over-excavation should be made for any detailed excavations in the rhyolite rock.

Ground vibration during excavation of rhyolite rock using an excavator fitted with a hydraulic rock breaker will be perceivable by the occupants of adjacent buildings and possibly may be problematic with regard to the performance of the buildings, depending upon the proximity of the excavation to the adjacent buildings and the size of equipment used to excavate the rhyolite. It would be prudent to conduct a full dilapidation survey of all adjoining structures and undertake vibration monitoring during the initial stages of rock excavation. As a guide to tolerable vibration limits, reference to the German Standard DIN 4150-Part 3 is suggested.

The possible presence of perched seepage water within the fill and near surface silt overlying the clay should be noted. The fill and near surface native soils are anticipated to be unstable and completely unworkable when saturated.

4.6.2 Temporary Batter Slopes

Under the Occupational Health and Safety Act 2004 no worker shall be permitted to enter an excavation exceeding a depth of 1.5 metres unless the excavation has been suitably battered or shored. This is of particular relevance to the residual soils and weathered rhyolite at the subject site, which are prone to sudden collapse without warning.

Temporary batter slopes for a maximum excavation depth of 3.0 metres should be no steeper than the following angles:

- Fill, silt and any moisture softened clay: - 35 degrees
- Native clay of stiff to very stiff consistency: - 45 degrees
- Distinctly weathered rhyolite: - 60 degrees

The above batter angles are measured from the horizontal and are subject to the following conditions:

- Any seepage water is intercepted well behind the excavation batter, prior to the commencement of excavation.
- Adjacent surcharge loads do not exceed 5 kPa. An experienced Geotechnical Engineer should perform a stability analysis on any proposed batters where surcharge loads exceed 5 kPa or where the excavation depth exceeds 3.0 metres.
- The crest of the temporary excavation batter is offset at least 3.0 metres from any adjacent structures with strip footing loads not exceeding 50 kN/m, subject to the strip footings being founded on native clay of very stiff consistency.
- Excavations in rock are inspected by a Geotechnical Engineer to ensure local toppling, block or wedge failures are not likely. Any excavated faces of rock should be carefully inspected and any loosened boulders removed from the face.
- Retention structures should be completed within approximately 1 month of the temporary batters being excavated.

4.6.3 Permanent Batter Slopes

Permanent batter slopes for a maximum excavation depth of approximately 3.0 metres should be no steeper than the following angles:

- Fill, silt and all clay: - 26 degrees (1 in 2 batter)
- Distinctly weathered rhyolite: - 50 degrees

The above permanent batter angles are measured from the horizontal and are subject to the following conditions:

Permanent batter slopes are subject to the following conditions:

- Adjacent surcharge loads do not exceed 5 kPa. Stability analysis should be performed on any proposed batters where surcharge loads exceed 5 kPa or where the excavation depth exceeds approximately 3.0 metres.

- Excavations in rock are inspected by a Geotechnical Engineer to ensure local toppling, block or wedge failures are not likely. Any excavated faces of rock should be carefully inspected and any loosened boulders removed from the face.
- Batters are enclosed or provided with surface protection against erosion.
- Any seepage water is permanently intercepted above the excavation batter.
- A catch drain is provided above the crest of batters and at the toe of batters.

4.6.4 Site Trafficability During Construction

During summer and early autumn when evaporation rates are typically high and rainfall levels low, it should be possible for trucks to traffic the stripped ground surface. Other than dust suppression no significant difficulties are anticipated. During winter and spring, and even following heavy or prolonged rain periods during summer and autumn, only tracked machinery will be able to access the site. If site access is to be provided for trucks once the ground surface has been exposed to rain it will be necessary to strip all poor quality and saturated fill overlying the clay from the areas to be accessed to expose a stable native clay and construct access tracks using non-descript crushed rock (100 millimetre minus), recycled brick and concrete rubble or equivalent placed over a suitable grade of geogrid and/or geotextile fabric. The depth of crushed rock required will depend upon the site conditions at the time of construction, the weight of the vehicles and the traffic frequency. Specialist suppliers of geotextiles should be consulted at the time of construction regarding the selection of an appropriate grade of geogrid or fabric.

4.7 PAVEMENTS AND FLOOR SLABS

4.7.1 Performance of Pavements and Floor Slabs

The successful performance of pavements and floor slabs at the subject site is subject to the following:

- Adequate preparation of the subgrade.
- Adequate surface and subsurface drainage, ensuring that pavement layers and subgrades do not become saturated during the life of the pavements.

Performance of the proposed pavements and floor slabs at the subject site will be commensurate with the level of subgrade preparation and the amount of care taken to prevent extremes in moisture content both during and post construction. Construction of pavements and floor slabs directly on an untreated native clay subgrade should also not be considered, given that the laboratory four day soaked CBR tests returned a very low value of 2.0%.

It is recommended that external pavements should be constructed on a prepared bridging layer of structural fill. For areas at the ground floor level which will be used for habitable space, the use of a suspended stiffened raft slab in lieu of a floating infill concrete slab is recommended.

4.7.2 Ground Floor Slab for Proposed Office Addition

The use of a stiffened raft slab in lieu of a floating infill concrete slab is recommended for habitable areas of the ground floor level within the proposed office addition. Given the variation in the moisture content regime of the highly reactive clay profile underlying the subject site, it will be necessary to deepen the edge beams and internal ribs of the raft slab to weathered rhyolite bedrock. Alternatively, the proposed stiffened raft slab may be fully suspended on footings founded on rhyolite, as detailed in Section 4.5.

Structural requirements will govern the design of a suspended raft slab. However, the minimum dimensions and reinforcement of a stiffened raft slab must at least meet the requirements of AS 2870 – 2011 for a ‘Class H1’ site classification.

Edge beams and internal ribs for a conventional raft slab founded on weathered rhyolite bedrock may be designed using a maximum allowable bearing pressure of 450 kPa.

It must be ensured that the excavations for all edge beams and load bearing internal ribs expose a minimum 80% weathered rhyolite rock with the remainder being very stiff clay. The clay must be distributed uniformly throughout the exposed founding stratum. Excavations must be dry and free of any loose or softened material prior to pouring concrete. Care must be taken to clean the excavations of any loose rhyolite boulders or clay softened by moisture ingress.

Excavations for all edge beams and load bearing internal ribs must be inspected by a qualified engineer to ensure that the required founding stratum has been achieved. The presence of any unusual features or conditions should be brought to the attention of this office before construction proceeds.

4.7.3 External Pavements Constructed on a Bridging Layer of Structural Fill

All poor quality fill, silt and any moisture softened clay must be stripped to expose native clay of very stiff consistency throughout. Further clay should be stripped as required to provide a minimum depth of 0.45 metres below the proposed pavement subgrade level.

Proof rolling of the stripped clay surface must be closely inspected by an experienced engineer. Any localised soft or heaving areas must be stripped and re-instated using compacted structural fill. If extensive areas of instability are identified during proof rolling of the stripped clay surface, or the subgrade has been exposed to significant rainfall and is unworkable at the time of construction, it will be necessary to place a layer of geogrid (Tensar TX160 geogrid or an equivalent product) over the surface of the clay prior to the placement of any structural fill. The geogrid must be installed in accordance with the manufacturer's specifications. A minimum lap width of 0.6 metres must be provided at all locations.

Structural fill meeting the material and placement specifications of Section 4.8.2 should be placed on the prepared ground surface to construct a bridging layer of compacted fill on which to construct pavements. A minimum depth of 0.45 metres of imported structural fill below the proposed pavement subgrade level is recommended.

Care must be taken to ensure that the bridging layer of structural fill is adequately compacted at the extremities. It is recommended that the bridging layer of structural fill should extend at least 2.0 metres beyond the perimeter of the proposed pavement to ensure adequate compaction under the edges of the pavement.

It is recommended that the preparation, placement and testing of all structural fill for the preparation of the bridging layer of structural fill is completed under Level 1 inspection by a suitably experienced geotechnical practitioner in accordance with Australian Standard AS 3798 – 2007, 'Guidelines on Earthworks for Commercial and Residential Developments'.

Adopting a soaked CBR value of 2.0% for the native clay and assuming a CBR value of 8% for the structural fill, a design CBR value of 4.0% may be adopted on top of a 0.45 metre thick bridging layer of structural fill. If required, a composite design CBR value may be determined for other layered profiles using the following Japan Roads Formula:

$$CBR_c = [\Sigma (t_n \times CBR_n^{1/3})]^3$$

Where CBR_c = the composite CBR of the layered system

n = layer number

t_n = thickness of layer n

Σt_n = 1.0 metre

CBR_n = CBR value of layer n

Rigid pavements and floor slabs may be designed using the following long and short term Young's Moduli:

- Structural Fill: - Long Term Modulus = 25 MPa
  - Short Term Modulus = 32 MPa.
- Underlying Native Clay: - Long Term Modulus = 10 MPa
  - Short Term Modulus = 14 MPa.

A single equivalent modulus value can be calculated for the layered soil profile using the method given in Section 3.3.7.1 of Publication T48 by Cement, Concrete and Aggregates Australia, 2009, titled 'Guide to Industrial Floors and Pavements'.

4.7.4 Subgrade Drainage and Moisture Control

Effective surface and perimeter cut-off drainage must be provided and maintained to ensure that the pavement layers and subgrade cannot become saturated. Premature pavement failure will occur where drainage is poor.

4.7.5 Inspection of Subgrade

The exposed pavement subgrades should be inspected by a qualified engineer during proof rolling to ensure that a suitable level of subgrade preparation has been achieved. The presence of any unusual features or conditions should be brought to the attention of this office before construction proceeds.

4.8 EARTHWORKS

4.8.1 Suitability of In-situ Soils for Use as Structural Fill

The site derived native clay is not recommended for use as structural fill. The high plasticity clays are difficult to compact and are potentially subject to significant volume changes post compaction.

4.8.2 Structural Fill

Imported structural fill may comprise one of the following imported materials:

- Ripped weathered siltstone or sandstone (low to medium strength sedimentary rock)
- Type A fill as defined by VicRoads
- Class 4 or better crushed rock as defined by Vic Roads

All structural fill should satisfy the following criteria:

- Maximum % of material retained on 40mm sieve after compaction:- 20%
- Percentage passing 4.75mm after compaction: - 40 – 80%
- Percentage passing 0.075mm after compaction: - 5 – 30%
- Maximum Liquid Limit after compaction: - 50%
- Maximum Plasticity Index after compaction: - 25%
- Plasticity Index x % passing 0.425mm sieve after compaction: - ≤650
- Minimum 4-day soaked CBR value: - 8%
- Maximum coefficient of permeability: - 1×10^{-7} metre/second

Structural fill must be placed on a stable base. Structural fill should be placed in uniform layers not exceeding a loose thickness of 200 millimetres and compacted to at least 98% of the Standard maximum dry density value as determined in accordance with Australian Standard AS1289 5.1.1. The fill should be moisture conditioned to 85 – 115% of the Standard optimum moisture content at the time of placement.

Where a batter is proposed close to the pavement perimeter, care must be taken to ensure that structural fill is adequately compacted at the extremities. Adequate compaction of the perimeter is best achieved by over filling and subsequently cutting back the perimeter of the fill platform to form final batters.

The placement of any structural fill at the site together with material selection and density testing should be conducted under the supervision of a suitably experienced geotechnical practitioner. All field and laboratory testing associated with the selection of a suitable imported fill material and monitoring of relative compaction should be performed in accordance with the test methods specified in Australian Standard AS 1289, ‘Methods of Testing Soils for Engineering Purposes.’ Australian Standard AS 3798, ‘Guidelines on Earthworks for Commercial and Residential Developments’ provides guidance on the specification, execution and control of earthworks relevant to the subject site. Level 1 supervision of all earthworks in accordance with Section 8.2 of Australian Standard AS 3798 is recommended.

4.8.3 Scheduling of Earthworks

During the wetter months of the year, particularly during winter and spring when evaporation rates are low, it is anticipated that it will be extremely difficult to conduct earthworks at the subject site. Significant additional costs and construction delays are likely to be incurred if earthworks are attempted during the wetter months of the year. It is recommended that all earthworks should be scheduled during the drier months of the year.

4.9 CONSTRUCTION REQUIREMENTS

4.9.1 Construction Adjacent to Excavations and Service Pipe Trenches

Buried services should not be located adjacent to footings. Where this cannot be avoided the trench should be backfilled in such a way as to prevent moisture ingress. Any footings located adjacent to excavations or backfilled service trenches should be founded well below a line drawn up at 45° to the horizontal from the base of the excavation.

4.9.2 Inspection of Subgrades and Footing Excavations

The exposed pavement subgrades and all footing excavations should be inspected by a qualified Geotechnical Engineer to ensure that the required founding stratum has been achieved. The presence of any unusual features or conditions should be brought to the attention of this office before construction proceeds.

4.9.3 Site Drainage and Soil Moisture Control Adjacent to Structures

The following minimum measures must be taken in the design and construction of the proposed development to ensure satisfactory performance of the proposed structures and pavements:

- Effective drainage of the site must be maintained at all times.
- Water run-off must be collected and diverted away from the structures and pavement subgrades during construction.
- Water must not be allowed to pond against footings during or after construction.
- The ground adjacent to footings must be graded to provide a permanent fall of 1(V):50(H) away from the footings over at least the first 4.0 metres.
- Water supply and drainage infrastructure must be maintained so that no leakage occurs.
- Construction of garden beds, particularly mounded garden beds, and the planting of trees and large shrubs adjacent to footings and pavements must be avoided.
- Excessive watering adjacent to footings must also be avoided and the installation of an irrigation or sprinkler system adjacent to structures and pavements is not recommended.

4.9.4 Articulation of Structures

Adequate articulation should be provided in accordance with 'The Cement and Concrete Association of Australia' – Technical Note TN61. In addition to the requirements of TN61 a full height articulation joint should be provided at the following locations:

- At the junction where two different footing types intersect.
- Where founding depths vary.
- Where the founding stratum varies.
- At all locations where the proposed addition connects to the existing structure.

4.10 ADDITIONAL SITE TESTING

The comments and recommendations contained within this report have been based on a limited amount of field testing, which does not provide coverage of the entire site for the proposed development. The presence of the existing structures at the subject site precluded access with a drilling rig to parts of the site at the time of the field investigation.

Upon demolition and removal of the existing structures at the site, further site testing, comprising one additional borehole will need to be conducted at the south west corner of the plan area of the proposed office building addition to confirm the subsurface soil and rock conditions over the balance of the site.

4.11 REPORT LIMITATIONS

The comments and recommendations of this report may require revision once additional geotechnical testing has been conducted at the site. The comments and recommendations of this report must not be used for final structural design and construction.

This report is for the use of the party to whom it is addressed only and has been produced specifically for the proposed development as described in Section 1.2 of this report and for no other purpose.

It has been assumed that the conditions encountered by the limited number of boreholes are representative of the site in general. Some variation from the conditions encountered by the boreholes is expected over the site.

It is beyond the scope of this report to comment on any possible contamination of the site.

Contractors should be provided access to this report. This report should only be reproduced in full.

If you require any further information please do not hesitate to contact the undersigned.

For and on behalf of
GEOAUST GEOTECHNICAL ENGINEERS PTY LTD

R. Nobakht

Reza Nobakht
MEng MIEAust

Stephen Mayer
BEng MIEAust CPEng EC-2262

TEST LOCATION PLAN

GeoAust Geotechnical Engineers Pty Ltd

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
LOCATION: 15 Anderson Street, LILYDALE

NOT TO SCALE

LEGEND

Denotes approximate borehole location

Denotes approximate footing probe and borehole location

N

Figure 1

GeoAust
Geotechnical
Engineers Pty Ltd

APPENDIX A

Definitions of Logging Terms and Symbols

APPENDIX A

EXPLANATION NOTES FOR BOREHOLE AND TEST PIT LOGS

SOIL CLASSIFICATION AND LOG SYMBOLS

SOIL CLASSIFICATION CHART

	MAJOR DIVISIONS		SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL SMALLER THAN 63MM IS LARGER THAN 0.075MM	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION IS LARGER THAN 2.0MM	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION IS SMALLER THAN 2.0MM	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL SMALLER THAN 63MM IS SMALLER THAN 0.075MM	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

GROUND WATER

	Inflow
	Outflow
	Standing level on completion
1/2	Standing level 1/2 hour after completion
	Collapse of borehole annulus
S	Slight seepage rate
M	Moderate seepage rate
H	High seepage rate
NOT OBSERVED	Ground water observation not possible. Ground water may or may not be present
NOT ENCOUNTERED	Ground water was not evident during excavation or a short time after completion

SAMPLING AND TESTING

DS	Disturbed sample
U60	Thin walled tube sample. Number indicates nominal sample diameter in mm
ES	Environmental sample
SPT	Standard penetration test
3/6/9 N=15	3,6 and 9 refer to blows per 150mm penetration. N=15 is the sum of blows after the initial 150mm penetration
3/6/9 blows for 20mm penetration: N>15.	3 and 6 refer to blows per 150mm penetration. 9 blows resulted in 20mm penetration at which point practical refusal of penetration occurred
S=47kPa	In-situ vane shear test. Result expressed as peak undrained shear strength in kPa
PP=145kPa	Pocket penetrometer test. Result expressed as dial reading in kPa
DCP	Dynamic Cone Penetrometer Test
EX	Excavation. Test starts at base of excavation
S	DCP sank under own weight or last blow of previous 100mm increment
E	End of DCP test
R	End of DCP test due to effective refusal of penetration

APPENDIX A

EXPLANATION NOTES FOR BOREHOLE AND TEST PIT LOGS

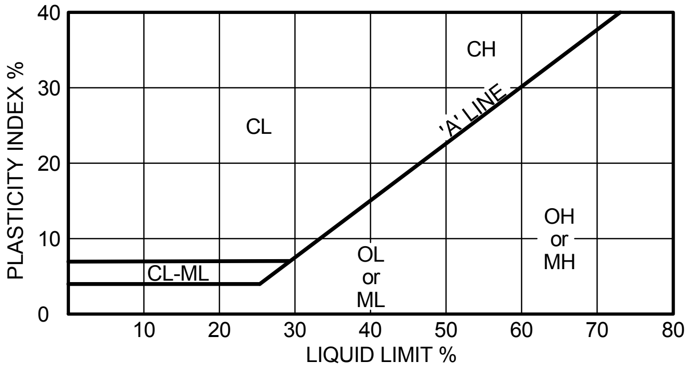
SOIL DESCRIPTION

PARTICLE SIZE

MAJOR DIVISION	SUB-DIVISION	SIZE (mm)
Boulders		>200mm
Cobbles		63 to 200mm
Gravel	Coarse	20 to 63mm
	Medium	6 to 20mm
	Fine	2.36 to 6mm
Sand	Coarse	0.6 to 2.36mm
	Medium	0.2 to 0.6mm
	Fine	0.075 to 0.2mm

0.075mm is the approximate minimum particle size discernible by eye

PLASTICITY CHART



MATERIAL PROPORTIONS

COARSE GRAINED SOILS		FINE GRAINED SOILS		IDENTIFICATION
% Fines	Modifier	% Coarse	Modifier	Field Assessment
≤ 5	Omit or use 'trace'	≤ 15	Omit or use 'trace'	Presence just detectable by feel or eye. Properties little or no different to those of primary soil
> 5 ≤ 12	Describe as 'with clay/silt' as applicable	> 15 ≤ 30	Describe as 'with sand/gravel' as applicable	Presence easily detected by feel or eye. Properties little or no different to those of primary soil
> 12	Prefix soil as 'silty/clayey' as applicable	> 30	Prefix soil as 'sandy/gravelly'	Presence obvious by feel or eye. Properties of soil are altered from those of the primary soil

COHESIVE SOILS - CONSISTENCY TERMS

LOG SYMBOL	TERM	UNDRAINED STRENGTH	FIELD ASSESSMENT
VS	Very Soft	<12kPa	Exudes between fingers when squeezed
S	Soft	12 - 25kPa	Can be moulded by light finger pressure
F	Firm	25 - 50kPa	Can be moulded by strong finger pressure
St	Stiff	50 -100kPa	Cannot be moulded by fingers. Can be indented by thumb
VSt	Very Stiff	100 - 200kPa	Can be indented by thumb nail
H	Hard	> 200kPa	Can be indented by thumb nail with difficulty

GRANULAR SOILS - DENSITY

LOG SYMBOL	TERM	DENSITY INDEX (%)
VL	Very Loose	< 15
L	Loose	15 - 35
MD	Medium Dense	35 - 65
D	Dense	65 - 85
VD	Very Dense	> 85

MOISTURE CONDITION

LOG SYMBOL	TERM	FIELD ASSESSMENT
D	Dry	Clay and silt are hard, friable, powdery, well dry of plastic limit. Sands and gravels are cohesionless, free running
M	Moist	Feels cool, darkened colour. Cohesive soils can be moulded. Granular soils tend to cohere
W	Wet	Feels cool, darkened in colour. Cohesive soils weakened, free water forms on hands when handling. Granular soils cohere

FIELD ASSESSMENT OF FILL COMPACTION

LOG SYMBOL	TERM
APC	Appears poorly compacted
AMC	Appears moderately compacted
AWC	Appears well compacted

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APPENDIX A

EXPLANATION NOTES FOR BOREHOLE AND TEST PIT LOGS

ROCK DESCRIPTION

STRENGTH OF INTACT ROCK MATERIAL

LOG SYMBOL	TERM	POINT LOAD INDEX (MPa) Is50	FIELD ASSESSMENT
EL	Extremely Low	Is50 <0.03	Easily remoulded by hand to a material with soil properties
VL	Very Low	0.03 ⩽ Is50 < 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; pieces up to 30mm thick can be broken by finger pressure
L	Low	0.1 ⩽ Is50 < 0.3	Easily scored with knife; indentations 1mm to 3mm after firm blows with pick point; core 150mm long and 50mm diameter can be broken by hand; sharp edges of core friable
M	Medium	0.3 ⩽ Is50 < 1.0	Readily scored with knife; core 150mm long and 50mm diameter can be broken by hand with difficulty
H	High	1 ⩽ Is50 < 3	Core 150mm long and 50mm diameter cannot be broken by hand but can be broken by single firm blow of pick; rock rings under hammer
VH	Very High	3 ⩽ Is50 < 10	Hand held specimen breaks with pick after more than one blow; rock rings under hammer
EH	Extremely High	10 ⩽ Is50	Specimen requires many pick blows to break intact rock, rock rings under hammer

ROCK WEATHERING CLASSIFICATION

LOG SYMBOL		TERM	DEFINITION
EW		Extremely Weathered	Rock is weathered to such an extent that it has soil properties , i.e. it iether disintegrates or can be remoulded in water
DW	**HW**	Distinctly Weathered	Rock strength usually changed by weathering. May be discoloured. Porosity may be increased by leaching, or may be decreased by deposition of weathering products in pores. Subdivided into HW and MW with alteration less for MW
	MW		
SW		Slightly Weathered	Rock is slightly discoloured but shows little or no change of strength from fresh rock
FR		Fresh	Rock shows no sign of decomposition or staining

ROCK MASS PROPERTIES

TERM	SEPARATION OF STRATIFICATION PLANES	TERM	DESCRIPTION
Thinly laminated	< 6mm	Fragmented	Primarily fragments < 20mm length and mostly of width < core diameter
Laminated	6mm to 20mm	Highly fractured	Core lengths generally less than 20mm to 40mm with occasional fragments
Very thinly bedded	20mm to 60mm		
Thinly bedded	60mm to 200mm	Fractured	Core lengths mainly 30mm to 100mm with occasional shorter and longer pieces
Medium bedded	0.2m to 0.6m	Slightly fractured	Core lengths generally 0.3m to 1.0m with occasional longer and shorter sections
Thickly beddded	0.6m to 2.0m		
Massive	> 2m	Unbroken	Core has no fractures

ROCK QUALITY DESIGNATION (RQD). RQD is calculated for each core run. The RQD is the sum of the length of all pieces of rock core longer than 100mm expressed as a percentage of the total length of rock core recovered.

CORE RECOVERY. Core recovery is calculated for each core run. Core recovery is the total length of core, rock or soil, recovered expressed as a percentage of the total length of the core run.

ROCK DEFECT DESCRIPTION - Description order: type, orientation in degrees, infill, infill thickness, surface shape, roughness

DEFECT TYPE		INFILL		INFILL THICKNESS		SURFACE SHAPE		ROUGHNESS	
LOG SYMBOL	TERM	LOG SYMBOL	TERM	LOG SYMBOL	TERM	LOG SYMBOL	TERM	LOG SYMBOL	TERM
BP	Bedding parting	**KL**	Clean	**V**	Veneer	**PL**	Planar	**SL**	Slickensided
JT	Joint	**CL**	Clay		<1mm thick	**CV**	Curved	**PO**	Polished
FT	Fault	**CA**	Carbonate	**SN**	Stain	**IR**	Irregular	**SO**	Smooth
SM	Seam	**RF**	Rock fragments		<1mm thick	**UN**	Undulose	**RO**	Rough
SH	Sheared zone	**RC**	Rock fragments and clay	**5**	5mm thick	**ST**	Stepped	**VR**	Very Rough
CR	Crushed seam								
IF	Infilled zone								
FR	Fractured zone								

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APPENDIX B

Bore Logs

BOREHOLE LOG

TEST LOCATION 1

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
RL:
DRILLED BY: P.R
DATUM:
LOGGED BY: H.V
DATE: 24/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
100mm Diameter Hand Auger	NOT OBSERVED	0.025		-	**FILL: Asphaltic Concrete**	-	-					
				-	**FILL: Gravelly Clay,** low plasticity, mottled brown, red, grey, fine to medium grained gravel, with fine to coarse grained sand	Moist (MC>PL)	APC (St)					
		0.5		-	**FILL: Ballast Cobbles**	-	-		0.5			
		0.6		CH	**CLAY:** high plasticity, grey and brown mottled tending brown mottled grey with depth	Moist (MC>PL)	St					S = 65kPa
									1.0			S = 70kPa
Wash Boring				-	1.5m - pale brown and grey				1.5			S = 90kPa 3/3/4 N = 7. PP = 200, 210, 215kPa
		2		CL	**Silty CLAY:** medium plasticity, grey with orange, with silt pockets and seams	-	VSt with H pockets		2.0			
									2.5			
									3.0			5/6/6 N = 12. PP = 320, 300, 330kPa
									3.5			
									4.0			
									4.5			5/6/10 N = 16. PP = 350, 420, 320kPa
									5.0			

Refer Appendix A for definition of logging terms and symbols

Figure B-1

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

BOREHOLE LOG

TEST LOCATION 1

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building, 15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: P.R
LOGGED BY: H.V
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
Wash Boring	NOT OBSERVED	5.5			**Silty CLAY:** medium plasticity, grey with orange, with silt pockets and seams	-	VSt with H pockets		5.5			
N.M.L.C Diamond Coring				-	**RHYOLITE:** fine grained, brown, fractured, joints 0° to 20° trace 65° to 90°, planar to undular, clean or iron stain, trace clay veneer, common healed joints with spacing less than 1cm	DW	VH		6.0			START CORING AT 5.65m RUN 1 (5.65m - 6.13m) 100% CORE RECOVERY RQD = 0% RUN 2 (6.13m - 7.61m) 100% CORE RECOVERY RQD = 20%
				- - -	6.56m - clay seam, 2mm thick 6.57m - clay seam, 11mm thick 6.64m - clay seam, 20mm thick				6.5 7.0 7.5			RUN 3 (7.61m - 9.07m) 100% CORE RECOVERY RQD = 100%
				-	8.0m - grey and brown				8.0 8.5			
		9.07		-	8.69m - clay seam, 15mm thick				9.0			
					END OF BOREHOLE LOG AT 9.07M							

Refer Appendix A for definition of logging terms and symbols

Figure B-2

BOREHOLE LOG

TEST LOCATION 2
SHEET 1 of 2

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building, 15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: A.M
LOGGED BY: A.M
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Test Depth	Comments and Test Results
127mm Diameter Auger	NOT OBSERVED	0 – 0.25	-	**FILL: Clayey Silt,** low plasticity, grey, trace gravel	Dry (MC<PL)	APC (VSt)		
		0.25 – 0.55	-	**FILL: Silty Clay,** medium plasticity, yellow-brown with grey, with silt pockets	Moist (MC>PL)			
		0.55 – 0.9	-	**FILL: Clayey Silt,** medium plasticity, grey with brown	Dry (MC<PL)	APC (VSt)		
		0.9 – 2.5	CH	**Silty CLAY:** high plasticity, yellow-brown and grey mottled with red-brown	Moist (MC>PL)	VSt	1.0	S > 120kPa
							1.5	S > 120kPa
		2.5 – 5	CL	**Silty CLAY:** medium plasticity, pale grey and yellow-brown, with bands of clayey silt approximately 0.05mm to 150mm thick			3.0	5/7/8 N = 15.
								PP = 330, 320, 320kPa Crumbles
							4.5	5/8/11 N = 19.

Refer Appendix A for definition of logging terms and symbols

Figure B-3

BOREHOLE LOG

GeoAust Geotechnical Engineers Pty Ltd
7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building, 15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: A.M
LOGGED BY: A.M
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
127mm Diameter Auger	NOT OBSERVED			CL	**Silty CLAY:** medium plasticity, pale grey and yellow-brown, with bands of clayey silt approximately 0.05mm to 150mm thick, with rhyolite seams	Moist (MC>PL)	VSt		5.5			
		5.7		-	**RHYOLITE:** brown and grey	DW	L to M		6.0			
N.M.L.C Diamond Coring		6.07		-	**RHYOLITE:** brown with grey, fractured, joints 0° to 80°, planar, smooth, iron stain, common healed joints with spacing less than 1cm	DW	VH		6.5 7.0 7.5 8.0 8.5		X	30 blows for 70mm penetration: SPT. START CORING AT 6.07m RUN 1 (6.07m - 6.63m) 100% CORE RECOVERY RQD = 0% RUN 2 (6.63m - 7.11m) 100% CORE RECOVERY RQD = 21% RUN 3 (7.11m - 8.55m) 100% CORE RECOVERY RQD = 72%
		8.55										
					END OF BOREHOLE LOG AT 8.55M							

Refer Appendix A for definition of logging terms and symbols

Figure B-4

BOREHOLE LOG

TEST LOCATION 3
SHEET 1 of 2

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building, 15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: P.R
LOGGED BY: H.V
RL:
DATUM:
DATE: 22/03/2016

Method	Ground Water	Depth	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Test	Comments and Test Results
127mm Diameter Auger		0.02	-	**FILL: Asphaltic Concrete**	-	-		50mm diameter PVC standpipe installed to 6.1m depth. Screened from 3.1m to 6.1m.
		0.38	-	**FILL: Silty Sandy Gravel (Crushed Rock),** fine to medium grained, brown with grey, sub-angular	Moist	AWC (D)		
			CH	**Silty CLAY:** high plasticity, brown mottled grey, trace fine grained sand	Moist (MC>PL)	VSt	0.5	S > 120kPa
							1.0	S > 120kPa
	18/4/16	1.25	-	1.2m - pale orange grey	Dry (MC<PL)	H		
		1.5	-	**RHYOLITE:** pale brown and grey	DW	H		
N.M.L.C Diamond Coring		2.92	-	**RHYOLITE:** fine grained, brown and grey, fragmented, fractures planar, smooth, clean or iron stained, trace clay veneer (1-3mm)		VH		START CORING AT 1.5m RUN 1 (1.5m - 1.75m) 100% CORE RECOVERY RQD = 0% RUN 2 (1.75m - 1.9m) 100% CORE RECOVERY RQD = 0% RUN 3 (1.9m - 2.06m) 100% CORE RECOVERY RQD = 0% RUN 4 (2.06m - 2.16m) 100% CORE RECOVERY RQD = 0% RUN 5 (2.16m - 2.34m) 100% CORE RECOVERY RQD = 0% RUN 6 (2.34m - 2.46m) 100% CORE RECOVERY RQD = 0%
			-	2.57m - highly fractured with common healed joints at less than 1cm spacing				RUN 7 (2.46m - 2.92m) 100% CORE RECOVERY RQD = 0%
			-	2.84m - clay seam (gravelly), 80mm thick				
			-	2.88m - fragmented				
		3.4	-	**CORE LOSS (Inferred Fragmented Rock)**	-	-		RUN 8 (2.92m - 3.4m) 0% CORE RECOVERY RQD = 0%
		3.53	-	**RHYOLITE:** fine grained, brown and grey, fragmented, fractures planar, smooth, clean or iron stained, trace clay veneer (1-3mm)	DW	VH		RUN 9 (3.4m - 3.45m) 100% CORE RECOVERY RQD = 0% RUN 10 (3.45m - 3.87m) 19% CORE RECOVERY RQD = 0%
		4.04	-	**CORE LOSS (Inferred Fragmented Rock)**	-	-		RUN 11 (3.9m - 4.14m) 40% CORE RECOVERY RQD = 0%
		4.33	-	**RHYOLITE:** fine grained, brown and grey, fragmented, fractures planar, smooth, clean or iron stained, trace clay veneer (1-3mm)	DW	VH		RUN 12 (4.14m - 4.33m) 100% CORE RECOVERY RQD = 0%
			-	**RHYOLITE:** fine grained, brown and grey, fractured joints 0° to 90°, planar, smooth, clean or iron stained, common healed joints with less than 1cm spacing	DW	VH		RUN 13 (4.33m - 4.64m) 42% CORE RECOVERY RUN 14 (4.64m - 5.32m) 100% CORE RECOVERY RQD = 0%

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

Refer Appendix A for definition of logging terms and symbols

Figure B-5

BOREHOLE LOG

TEST LOCATION 3
SHEET 2 of 2

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: P.R
LOGGED BY: H.V
RL:
DATUM:
DATE: 22/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample DS	Sample U60	Sample ES	Depth	DCP Test	Test	Comments and Test Results
N.M.L.C Diamond Coring				-	**RHYOLITE:** fine grained, brown and grey, fractured joints 0° to 90°, planar, smooth, clean or iron stained, common healed joints with less than 1cm spacing 5.16m - highly fractured zone, 140mm thick	DW	VH				5.5			RUN 15 (5.32m - 5.87m) 65% CORE RECOVERY RQD = 0%
		5.68		-	**CORE LOSS**	-	-							
		5.87		- -	**RHYOLITE:** fine grained, brown and grey, fractured joints 0° to 90°, planar, smooth, clean or iron stained, common healed joints with less than 1cm spacing 5.87m - clay seam, 150mm thick	DW	VH				6.0			RUN 16 (5.87m - 6.1m) 100% CORE RECOVERY RQD = 0%
		6.1												

END OF BOREHOLE LOG AT 6.1M

Refer Appendix A for definition of logging terms and symbols

Figure B-6

BOREHOLE LOG

TEST LOCATION
4
SHEET 1 of 1

GeoAust Geotechnical Engineers Pty Ltd
7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No:	4548
CLIENT:	Prensa Pty Ltd
PROJECT:	Proposed Additions to Yarra Ranges Council Municipal Office Building 15 Anderson Street, LILYDALE
LOCATION:	Refer to Test Location Plan (Figure 1)
DRILLED BY:	A.M
LOGGED BY:	A.M
RL:	
DATUM:	
DATE:	23/03/2016

Method	Ground Water	Depth	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Comments and Test Results
127mm Diameter Auger	NOT OBSERVED	0.03	-	**FILL: Asphaltic Concrete**	-	-	
		0.25	-	**FILL: Silty Sandy Gravel (Crushed Rock),** fine to medium grained, brown with grey, angular, igneous; Sand, fine to coarse grained	Moist	AWC	
		0.3	-	**FILL: Silty Sandy Gravel (Crushed Rock),** fine to coarse grained, brown with grey, angular, igneous; Sand, fine to coarse grained	Very Moist (MC>>PL)	F to St	S = 40kPa
		0.45	ML	**Clayey SILT:** low plasticity, grey trace brown			
		1.1	CH	**Silty CLAY:** medium to high plasticity, grey-brown mottled	Very Moist (MC>>PL)	St	S = 70kPa
		1.25	CL	**Silty CLAY:** medium plasticity, pale yellow-brown and grey	Moist (MC~PL)	VSt	S > 120kPa
		1.5	-	**RHYOLITE:** grey and brown, highly fractured to fragmented, joints 0° to 90°, planar, smooth, iron stain	DW	L to M VH	START CORING AT 1.5m
N.M.L.C Diamond Coring		1.61	-	**CORE LOSS**	-	-	RUN 1 (1.5m - 1.84m) 68% CORE RECOVERY RQD = 0%
		2.56	-	**RHYOLITE:** grey and brown, highly fractured to fragmented, joints 0° to 90°, planar, smooth, iron stain	DW	VH	RUN 2 (1.84m - 2.01m) 100% CORE RECOVERY RQD = 0% RUN 3 (2.01m - 2.27m) 100% CORE RECOVERY RQD = 0% RUN 4 (2.27m - 2.56m) 100% CORE RECOVERY RQD = 0%

Columns also printed: Graphic Log; Sample (DS, U60, ES); Depth (0.5, 1.0, 1.5, 2.0, 2.5); DCP Test; Test.

END OF BOREHOLE LOG AT 2.56M

Refer Appendix A for definition of logging terms and symbols

Figure B-7

BOREHOLE LOG

GeoAust Geotechnical Engineers Pty Ltd

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E-mail: enquiries@geoaust.com.au

TEST LOCATION 5

SHEET 1 of 3

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building, 15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: A.M
LOGGED BY: A.M
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
127mm Diameter Auger		0.05	-	**FILL: Asphaltic Concrete**	-	-					50mm diameter PVC standpipe installed to 11.23m depth. Screened from 5.23m to 11.23m.
		0.4	-	**FILL: Silty Clay,** low plasticity, orange-brown, with clayey silt pockets and fine to medium grained gravel	Moist (MC<PL)	AWC (VSt)					
			CH	**Silty CLAY:** high plasticity, yellow-brown and grey mottled, trace red-brown	Moist (MC>PL)	VSt		0.5			S = 104kPa
						St		1.0			
Wash Boring								1.5			S = 82kPa 3/3/7 N = 10.
		3.7				VSt		2.0 / 2.5 / 3.0 / 3.5			4/7/9 N = 16. PP = 450, 430, 470kPa
			CL	**Silty CLAY:** medium to high plasticity, grey with yellow-brown and red-brown, with clayey silt seams and pockets	Moist (MC>PL)	H		4.0 / 4.5 / 5.0			6/11/16 N = 27. PP = >600kPa

Refer Appendix A for definition of logging terms and symbols

Figure B-8

BOREHOLE LOG

TEST LOCATION
5
SHEET 2 of 3

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: A.M
LOGGED BY: A.M
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Depth	Comments and Test Results
Wash Boring				**Silty CLAY:** medium to high plasticity, grey with yellow-brown and red-brown, with clayey silt seams and pockets	Moist (MC>PL)	H	5.5	
							6.0	7/15/17 N = 32. PP = >600kPa
							6.5	
							7.0	
	18/4/16						7.5	6/11/14 N = 25. PP = >600kPa
							8.0	
							8.5	
		8.7	-	**RHYOLITE:** pale grey and brown, fragmented with clay infill and seams	DW to EW	EL	9.0	19/34/- N > 34. Hammer double bouncing START CORING AT 9.3m RUN 1 (9.3m - 9.88m) 100% CORE RECOVERY RQD = 0%
			-	9.44m - highly fractured band, 250mm thick	DW	VH	9.5	
					EW	EL		
		9.88	-	Continued next page	DW	VH	10.0	

Refer Appendix A for definition of logging terms and symbols

Figure B-9

BOREHOLE LOG

TEST LOCATION 5

SHEET 3 of 3

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building, 15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: A.M
LOGGED BY: A.M
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
N.M.L.C Diamond Coring		10.27			**RHYOLITE:** grey and brown, highly fractured to fragmented, joints 0° to 90°, planar, smooth, iron stain, with clay seams 1mm to 10mm thick, common healed joints at less than 1cm spacing	DW	VH					RUN 2 (9.88m - 10.42m) 72% CORE RECOVERY RQD = 0%
		10.42		-	**CORE LOSS**	-	-					
		10.66		-	**RHYOLITE:** grey and brown, highly fractured to fragmented, joints 0° to 90°, planar, smooth, iron stain, common healed joints at less than 1cm spacing	DW	VH		10.5			RUN 3 (10.42m - 10.72m) 80% CORE RECOVERY RQD = 0%
		10.82		-	**CORE LOSS**	-	-					RUN 4 (10.72m - 11.14m) 76% CORE RECOVERY RQD = 0%
		11.23		-	**RHYOLITE:** grey and brown, highly fractured to fragmented, joints 0° to 90°, planar, smooth, iron stain, common healed joints at less than 1cm spacing	DW	VH		11.0			RUN 5 (11.14m - 11.23m) 100% CORE RECOVERY RQD = 0%

END OF BOREHOLE LOG AT 11.23M

Refer Appendix A for definition of logging terms and symbols

BOREHOLE LOG

TEST LOCATION 6
SHEET 1 of 1

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: J.F
LOGGED BY: H.V
RL:
DATUM:
DATE: 22/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
100mm Diameter Hand Auger	NOT ENCOUNTERED			- -	**FILL: Tan Bark** 0.05m - dark brown	Dry	APC (L)					
		0.3		-	**FILL: Silty Sand,** fine to medium grained, brown, poorly graded, with fine to medium grained gravel and rootlets							
		0.5		-	**FILL: Clay,** high plasticity, brown	Dry (MC>PL)	APC (St)		0.5			S = 90kPa
		0.9		-	**FILL: Silty Sand,** brown, poorly graded, with fine grained gravel	Dry	APC (MD)		1.0			
		1.1		ML	**SILT:** low plasticity, grey mottled brown, porous	Dry (MC<PL)	VSt					S > 120kPa
		1.4		CH	**Silty CLAY:** medium to high plasticity, mottled grey-brown	Moist (MC>PL)	VSt		1.5			
									2.0			S > 120kPa
				-	2.1m - becomes mottled orange, grey, red							
		2.5							2.5			S > 120kPa

END OF BOREHOLE LOG AT 2.5M

Refer Appendix A for definition of logging terms and symbols

Figure B-11

BOREHOLE LOG

GeoAust Geotechnical Engineers Pty Ltd
7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

TEST LOCATION 7

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building, 15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: J.F
LOGGED BY: H.V
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
100mm Diameter Hand Auger	NOT ENCOUNTERED	0.0–0.3		-	**FILL: Tan Bark**	-	-					
		0.3–0.7		-	**FILL: Silty Sand,** fine to medium grained, dark grey, with tan bark, clay lumps and fine to coarse grained gravel, trace roots	Dry	APC (L)		0.5			
		0.7–1.15		-	**FILL: Silty Gravel,** medium to coarse grained, brown, with rootlets				1.0			
		1.15–1.5		ML	**Clayey SILT:** low plasticity, pale brown and grey mottled	Dry (MC<PL)	VSt		1.5		◢	S > 120kPa
		1.5–2.55		CH	**Silty CLAY:** medium to high plasticity, mottled orange-brown	Moist (MC>PL)			2.0		◢	S > 120kPa
									2.5		◢	S > 120kPa

END OF BOREHOLE LOG AT 2.55M

Refer Appendix A for definition of logging terms and symbols

Figure B-12

BOREHOLE LOG

TEST LOCATION 8

SHEET 1 of 1

GeoAust Geotechnical Engineers Pty Ltd
7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: A.M
LOGGED BY: A.M
RL:
DATUM:
DATE: 24/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample DS	Sample U60	Sample ES	Depth	DCP Test	Test	Comments and Test Results
127mm Diameter Auger	NOT ENCOUNTERED	0.075		-	**FILL: Asphaltic Concrete**	-	-							
		0.28		-	**FILL: Silty Sandy Gravel (Crushed Rock),** grey and brown; Sand, fine to coarse grained, with cobbles	Dry	AWC							
		1		-	**RHYOLITE:** brown and pale grey	DW	H to VH				0.5 1.0			
					END OF BOREHOLE LOG AT 1M									EFFECTIVE AUGER REFUSAL

Refer Appendix A for definition of logging terms and symbols

Figure B-13

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

BOREHOLE LOG

TEST LOCATION 9

SHEET 1 of 1

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
RL:
DRILLED BY: A.M
DATUM:
LOGGED BY: A.M
DATE: 24/03/2016

Method	Ground Water	Depth	Graphic Log	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	Depth	DCP Test	Test	Comments and Test Results
127mm Diameter Auger	NOT ENCOUNTERED	0.08		-	**FILL: Asphaltic Concrete**	-	-					
		0.18		-	**FILL: Silty Sandy Gravel (Crushed Rock),** grey and brown; Sand, fine to coarse grained, with cobbles	Dry	AWC					
		0.5		-	**FILL: Clayey Silt,** low plasticity, brown, with fine to coarse grained gravel	Moist (MC<PL)	AWC		0.5			
		0.65		ML	**Clayey SILT:** medium plasticity, yellow-brown mottled grey	Moist (MC<PL)	VSt					
		0.95		CH	**Silty CLAY:** high plasticity, grey and brown mottled, with clayey silt laminae	Moist (MC>PL)	VSt		1.0			
		1.1		CL	**Silty CLAY:** medium plasticity, pale yellow-brown and brown	Moist (MC<PL)	H					
		1.5		-	**RHYOLITE:** brown and grey	SW	VH		1.5			

END OF BOREHOLE LOG AT 1.5M

Refer Appendix A for definition of logging terms and symbols

Figure B-14

BOREHOLE LOG

GeoAust Geotechnical Engineers Pty Ltd

7 Micro Circuit, DANDENONG SOUTH VIC 3175
T: (03) 8787 5663 F: (03) 8782 0276
E-mail: enquiries@geoaust.com.au

TEST LOCATION 10
SHEET 1 of 1

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
15 Anderson Street, LILYDALE
LOCATION: Refer to Test Location Plan (Figure 1)
DRILLED BY: A.M
LOGGED BY: A.M
RL:
DATUM:
DATE: 30/03/2016

Method: 127mm Diameter Hand Auger
Ground Water: NOT ENCOUNTERED

Depth	Classification Symbol	Material description	Moisture / Weathering	Density / Consistency	Sample (DS / U60 / ES)	DCP Test	Test	Comments and Test Results
0.2	-	**FILL: Gravelly Sandy Silt,** low plasticity, grey; Sand, fine to coarse grained; Gravel, fine to coarse grained	Dry	APC				
0.4	-	**FILL: Silty Sandy Gravel,** fine to coarse grained, angular, grey; Sand, fine to coarse grained	Dry	APC				
1.1	ML	**Clayey SILT:** low plasticity, grey mottled brown, clay content increasing with depth	Dry (MC<PL)	H				
1.4	CH	**Silty CLAY:** medium to high plasticity, yellow-brown and grey mottled, with silt inclusions	Moist (MC<PL)	H				
	CH	**Silty CLAY:** high plasticity, brown and grey mottled						
2.5	-	2.2m - trace extremely weathered rhyolite						
		END OF BOREHOLE LOG AT 2.5M						

Refer Appendix A for definition of logging terms and symbols

Figure B-15

GeoAust
Geotechnical
Engineers Pty Ltd

APPENDIX C

Core Photographs

GeoAust Geotechnical Engineers Pty Ltd

Photograph of NMLC Core Recovered from Borehole 1

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
LOCATION: 15 Anderson Street, LILYDALE

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

Approximate Scale

Figure C1

GeoAust Geotechnical Engineers Pty Ltd

Photograph of NMLC Core Recovered from Borehole 2

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
LOCATION: 15 Anderson Street, LILYDALE

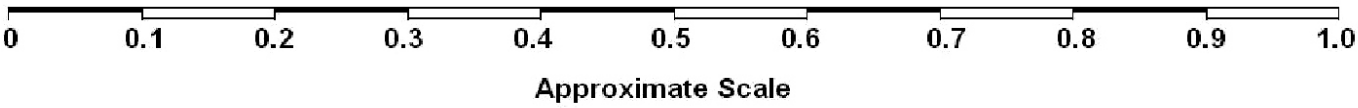
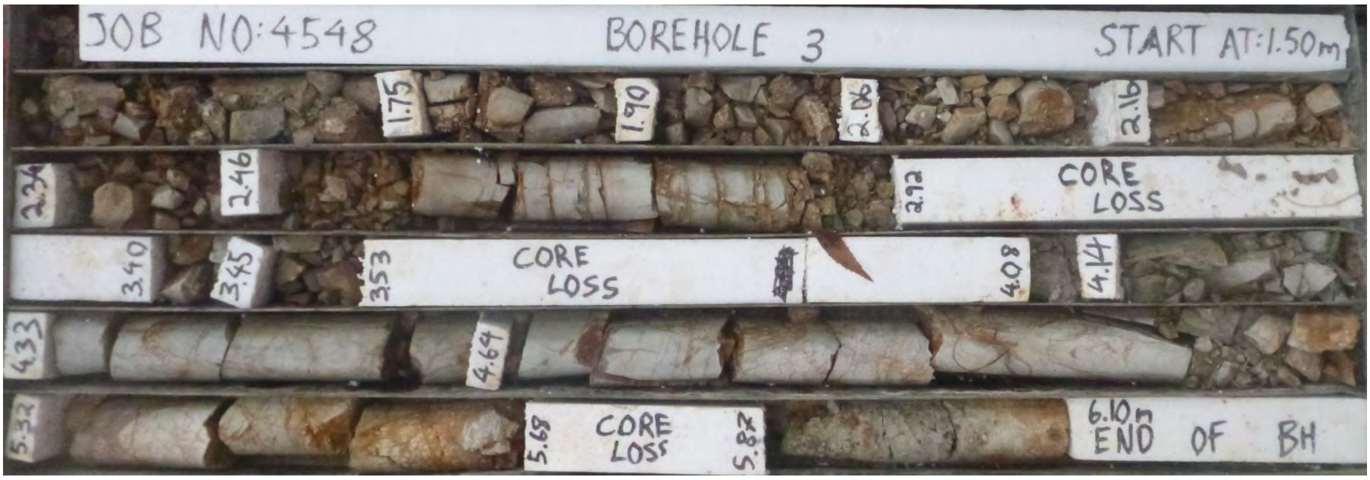


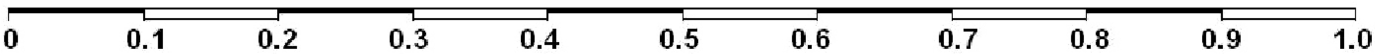
Figure C2

GeoAust Geotechnical Engineers Pty Ltd

Photograph of NMLC Core Recovered from Borehole 3

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
LOCATION: 15 Anderson Street, LILYDALE





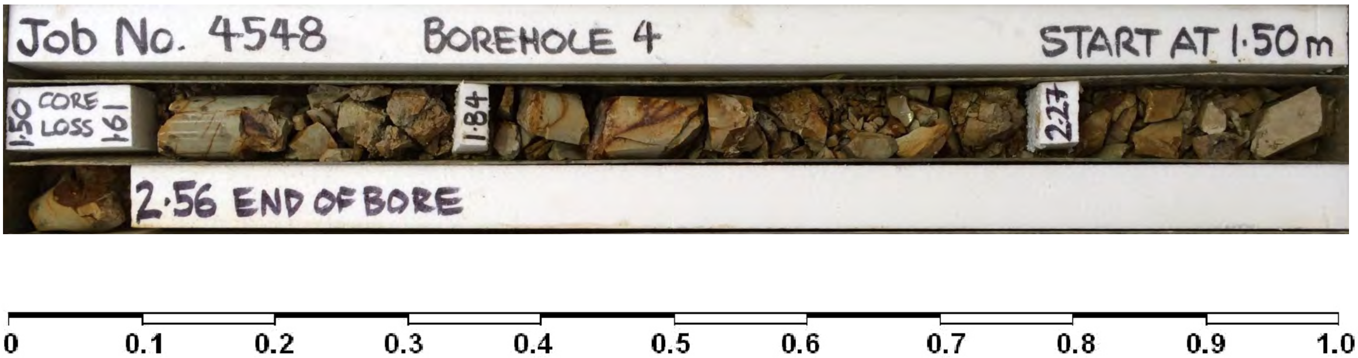
Approximate Scale

Figure C3

GeoAust Geotechnical Engineers Pty Ltd

Photograph of NMLC Core Recovered from Borehole 4

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
LOCATION: 15 Anderson Street, LILYDALE



Approximate Scale

Figure C4

Photograph of NMLC Core Recovered from Borehole 5

GeoAust Geotechnical Engineers Pty Ltd

JOB No: 4548
CLIENT: Prensa Pty Ltd
PROJECT: Proposed Additions to Yarra Ranges Council Municipal Office Building
LOCATION: 15 Anderson Street, LILYDALE

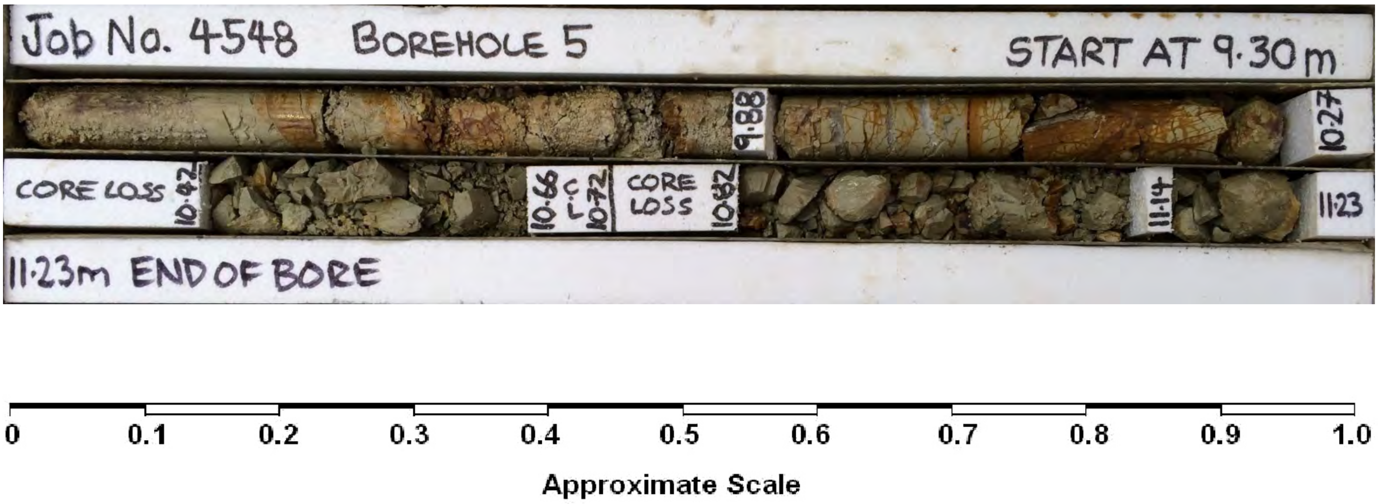


Figure C5

GeoAust
Geotechnical
Engineers Pty Ltd

APPENDIX D

Laboratory Test Results

STANDARD COMPACTION

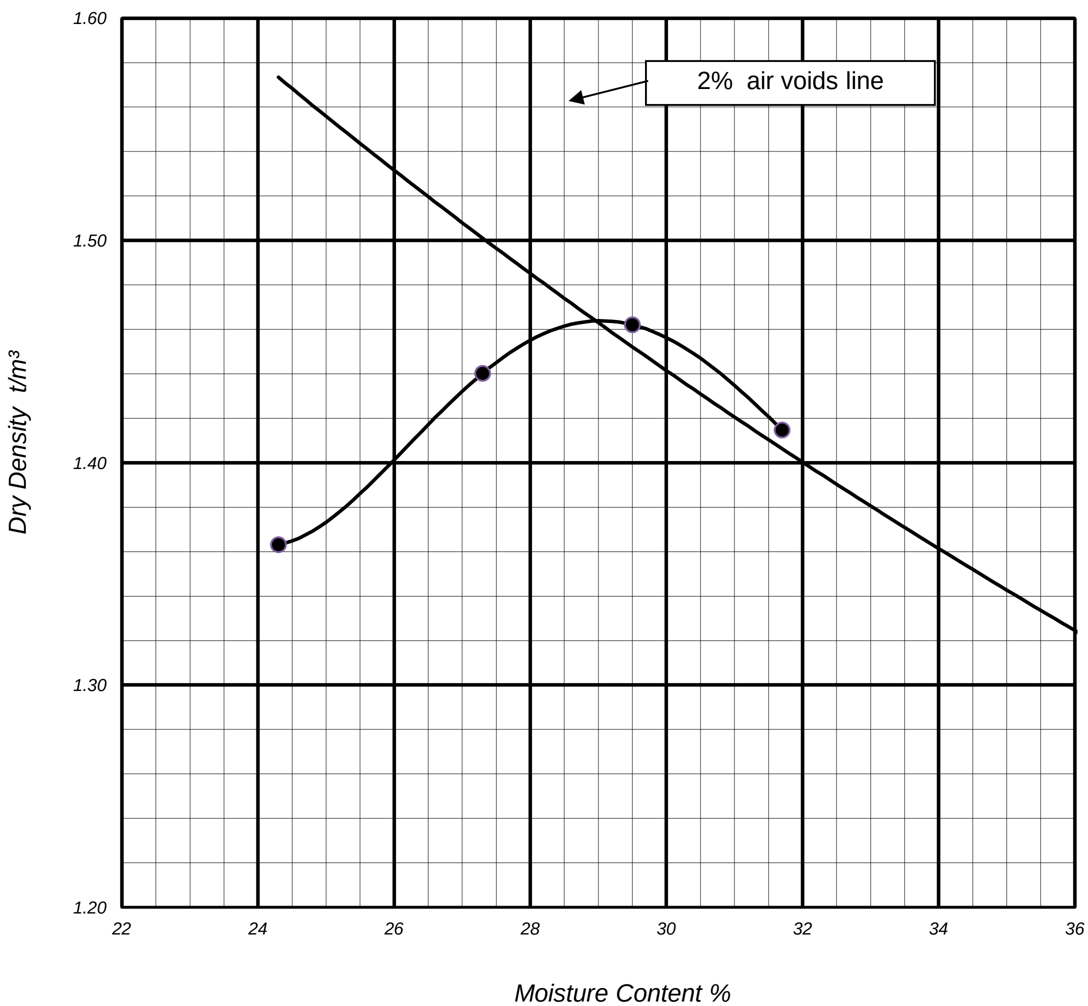
AS 1289.5.1.1

		Job No	16038
CIVIL GEOTECHNICAL SERVICES		*Report No*	16038/R042
6 - 8 Rose Avenue, Croydon 3136		*Date of Issue*	13/04/16
Client	GEOAUST (DANDENONG SOUTH)	*Tested by*	BG
Project	JOB No. 4548 15 ANDERSON STREET	*Date tested*	06/04/16
Location	LILYDALE	*Checked by*	PJF
Sample Identification	Sample A	*Sample No*	16038037
Sample Description		*Sampled by*	Client
CLAY, high plasticity, grey / brown		*Sampling date*	2016

Oversize material retained on 19.0mm sieve = 0 %		*Mould Type*	A
Maximum Dry Density	1.46 *t/m³*	*Optimum Moisture Content*	29.0 %

DRY DENSITY - MOISTURE CONTENT PLOT

Calculated apparent particle density = 2.63 *t/m³*



AS512-R8-MAR 13

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Accreditation No 9909

Approved Signatory : Peter Fry

COMMERCIAL IN CONFIDENCE

SOAKED C.B.R. TEST
AS 1289.6.1.1

CIVIL GEOTECHNICAL SERVICES
6 - 8 Rose Avenue, Croydon 3136

Job No 16038
Report No 16038/R043
Date of Issue 13/04/16

Client	GEOAUST (DANDENONG SOUTH)	*Tested by*	BG
Project	JOB No. 4548 15 ANDERSON STREET	*Date tested*	12/04/16
Location	LILYDALE	*Checked by*	PJF

Sample No		16038037
Sample identification		Sample A
Date sampled		2016
Sampled by		Client
Sampling method		By Client
Field moisture content		
Moisture content	*%*	-
Compaction details 1		
AS 1289.5.1.1 Standard Compaction - see Report No		16038/R042
Maximum Dry Density	*t/m³*	1.46
Optimum Moisture Content	*%*	29.0
Material retained on 19.0mm sieve and discarded	*%*	0
Compaction details 2		
Target laboratory density ratio	*%*	98
Target laboratory moisture ratio	*%*	100
No of layers		3
Specimen details before soaking		
Dry density	*t/m³*	1.43
Moisture content	*%*	29.3
Laboratory moisture ratio	*%*	101
Laboratory density ratio	*%*	98
Period of soaking	*days*	4
Specimen details after soaking		
Dry density	*t/m³*	1.40
Moisture content	*%*	31.6
Laboratory moisture ratio	*%*	109
Laboratory density ratio	*%*	96
Test details		
Moisture content top 30mm	*%*	35.1
Surcharge mass	*kg*	4.5
Swell	*%*	2.0
C.B.R. VALUE	***%***	**2.5**
Penetration	*mm*	2.5
Sample description		CLAY, high plasticity, grey / brown

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

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Accreditation No 9909

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Approved Signatory : Peter Fry

STANDARD COMPACTION

AS 1289.5.1.1

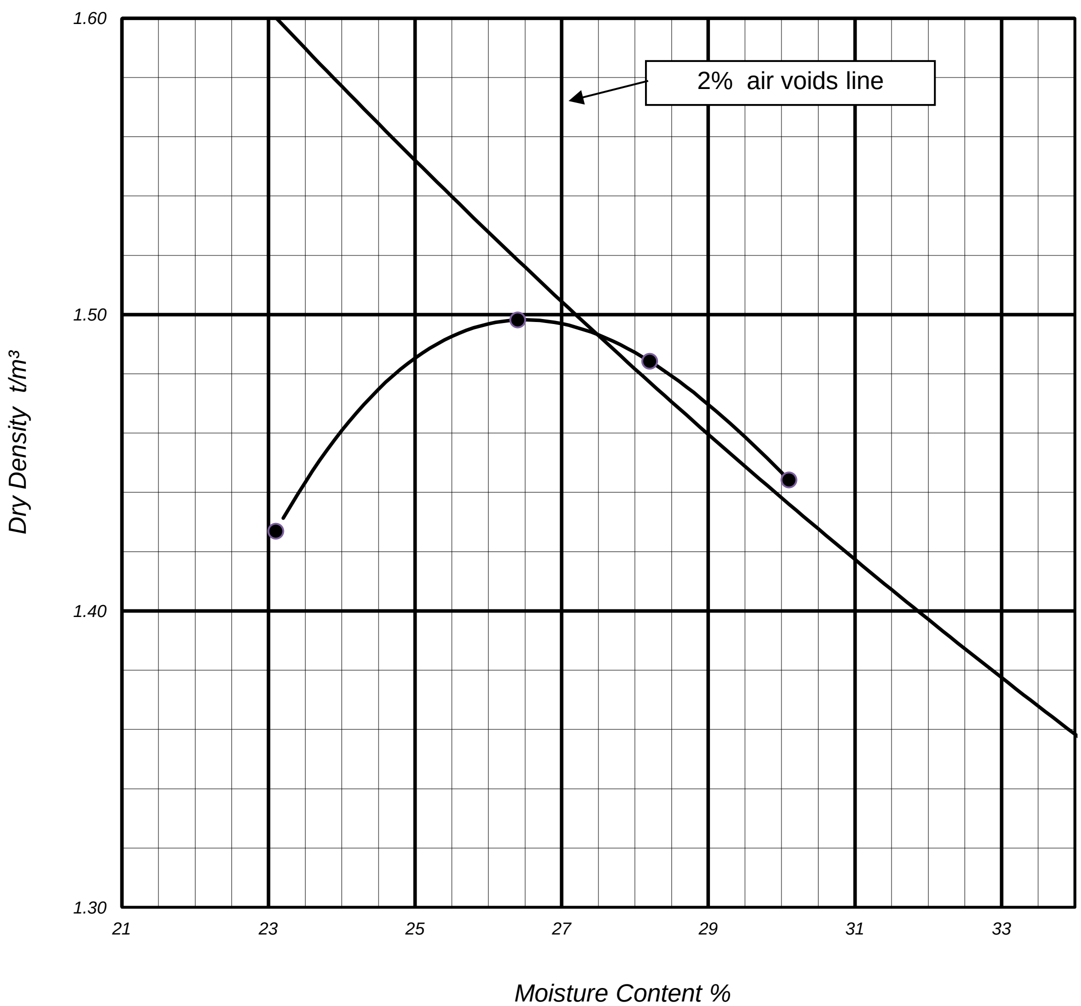
CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Job No	16038		
Report No	16038/R044		
Date of Issue	13/04/16		
Client	GEOAUST (DANDENONG SOUTH)	*Tested by*	BG
Project	JOB No. 4548 15 ANDERSON STREET	*Date tested*	06/04/16
Location	LILYDALE	*Checked by*	PJF
Sample Identification	Sample B	*Sample No*	16038038
Sample Description	CLAY, high plasticity, brown with red and grey	*Sampled by*	Client
		Sampling date	2016
Oversize material retained on 19.0mm sieve = 0 %		*Mould Type*	A
Maximum Dry Density	1.50 *t/m³*	*Optimum Moisture Content*	26.5 *%*

DRY DENSITY - MOISTURE CONTENT PLOT

Calculated apparent particle density = 2.62 *t/m³*



AS512-R8-MAR 13

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Approved Signatory : Peter Fry

SOAKED C.B.R. TEST

AS 1289.6.1.1

CIVIL GEOTECHNICAL SERVICES
6 - 8 Rose Avenue, Croydon 3136

Job No	16038
Report No	16038/R045
Date of Issue	13/04/16

Client	GEOAUST (DANDENONG SOUTH)	*Tested by*	BG
Project	JOB No. 4548 15 ANDERSON STREET	*Date tested*	12/04/16
Location	LILYDALE	*Checked by*	PJF

Sample No		16038038
Sample identification		Sample B
Date sampled		2016
Sampled by		Client
Sampling method		By Client
Field moisture content		
Moisture content	%	-
Compaction details 1		
AS 1289.5.1.1 Standard Compaction - see Report No		16038/R044
Maximum Dry Density	t/m³	1.50
Optimum Moisture Content	%	26.5
Material retained on 19.0mm sieve and discarded	%	0
Compaction details 2		
Target laboratory density ratio	%	98
Target laboratory moisture ratio	%	100
No of layers		3
Specimen details before soaking		
Dry density	t/m³	1.46
Moisture content	%	27.0
Laboratory moisture ratio	%	102
Laboratory density ratio	%	98
Period of soaking	days	4
Specimen details after soaking		
Dry density	t/m³	1.42
Moisture content	%	30.7
Laboratory moisture ratio	%	116
Laboratory density ratio	%	95
Test details		
Moisture content top 30mm	%	33.7
Surcharge mass	kg	4.5
Swell	%	3.0
C.B.R. VALUE	***%***	**2**
Penetration	mm	2.5
Sample description		CLAY, high plasticity, brown with red and grey

A611 V1.6 Soaked MAR 13

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Approved Signatory : Peter Fry

TEST RESULTS

AS 1289.2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & 3.6.1

Job No	16038
Report No	16038/R046
Date of Issue	13/04/16

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	GEOAUST (DANDENONG SOUTH)	*Tested by*	SK
Project	JOB No. 4548 15 ANDERSON STREET	*Date tested*	07/04/16
Location	LILYDALE	*Checked by*	PJF

Sample Identification	*Soil Description*	*Field Moisture Content* %	*Liquid Limit* %	*Plastic Limit* %	*Plasticity Index* %	*Linear Shrinkage* %	*% Passing 75µm sieve*
16038039 BH5 1.5 - 2.0m	CLAY, high plasticity, pale grey and orange-brown	-	52	19	33	12.0	-
16038040 BH6 0.4 - 0.5m	CLAY, medium plasticity, pale brown	17.7	-	-	-	-	-
16038041 BH6 0.9 - 1.0m	CLAY, medium plasticity, pale brown	10.0	-	-	-	-	-
16038042 BH6 1.4 - 1.5m	CLAY, high plasticity, pale grey and orange-brown	25.1	78	23	55	18.0	-
16038043 BH6 1.9 - 2.0m	CLAY, high plasticity, pale grey and orange-brown	24.7	81	23	58	20.0	-
16038044 BH6 2.4 - 2.5m	CLAY, high plasticity, orange-brown, red and grey	22.9	-	-	-	-	-
16038045 BH7 0.4 - 0.5m	CLAY, low plasticity, grey	10.4	-	-	-	-	-
16038046 BH7 0.9 - 1.0m	CLAY, low plasticity, grey	7.9	-	-	-	-	-
16038047 BH7 1.4 - 1.5m	CLAY, medium plasticity, pale brown	16.1	-	-	-	-	-

Notes

AS 1289.3.1.2, 3.2.1 & 3.4.1

Method of drying:	Oven dried
Dry/Wet sieve:	Dry
Curing time:	>24hrs

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Approved Signatory : Peter Fry

TEST RESULTS

AS 1289.2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & 3.6.1

Job No	16038
Report No	16038/R047
Date of Issue	13/04/16

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	GEOAUST (DANDENONG SOUTH)	*Tested by*	SK
Project	JOB No. 4548 15 ANDERSON STREET	*Date tested*	07/04/16
Location	LILYDALE	*Checked by*	PJF

Sample Identification	*Soil Description*	*Field Moisture Content* %	*Liquid Limit* %	*Plastic Limit* %	*Plasticity Index* %	*Linear Shrinkage* %	*% Passing 75µm sieve*
16038048 BH7 1.5 - 1.6m	CLAY, high plasticity, pale grey	-	56	20	36	15.5	-
16038049 BH7 1.9 - 2.0m	CLAY, high plasticity, pale grey and orange-brown	21.7	-	-	-	-	-
16038050 BH7 2.4 - 2.5m	CLAY, high plasticity, pale grey and orange-brown	19.8	-	-	-	-	-
16038051 BH8 1.1 - 1.2m	CLAY, high plasticity, pale brown and grey	19.6	-	-	-	-	-
16038052 BH8 1.4 - 1.5m	CLAY, high plasticity, orange-brown and grey	20.8	-	-	-	-	-
16038053 BH8 1.9 - 2.0m	CLAY, high plasticity, pale grey and orange-brown	18.8	-	-	-	-	-
16038054 BH8 2.4 - 2.5m	CLAY, high plasticity, pale grey and brown	18.9	-	-	-	-	-

Notes

AS 1289.3.1.2, 3.2.1 & 3.4.1

Method of drying:	Oven dried
Dry/Wet sieve:	Dry
Curing time:	>24hrs

SUMMARY1 V1.3 MAR 13

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