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DETAILED SITE INVESTIGATION (DSI)

183 & 218 New Canterbury Road, Lewisham NSW

prepared for

Illuminate Living Pty Ltd

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ABBREVIATIONS

AIP	<i>Australian Institute of Petroleum Ltd</i>	QA/QC	<i>Quality Assurance, Quality Control</i>
ANZECC	<i>Australian and New Zealand Environment and Conservation Council</i>	RAC	<i>Remediation Acceptance Criteria</i>
AST	<i>Aboveground Storage Tank</i>	RAP	<i>Remediation Action Plan</i>
BGL	<i>Below Ground Level</i>	RPD	<i>Relative Percentage Difference</i>
BTEX	<i>Benzene, Toluene, Ethyl benzene and Xylene</i>	SAC	<i>Site Assessment Criteria</i>
COC	<i>Chain of Custody</i>	SVC	<i>Site Validation Criteria</i>
DA	<i>Development Approval</i>	TCLP	<i>Toxicity Characteristics Leaching Procedure</i>
DP	<i>Deposited Plan</i>	TPH	<i>Total Petroleum Hydrocarbons</i>
DQOs	<i>Data Quality Objectives</i>	UCL	<i>Upper Confidence Limit</i>
EPA	<i>Environment Protection Authority</i>	UST	<i>Underground Storage Tank</i>
ESA	<i>Environmental Site Assessment</i>	VHC	<i>Volatile Halogenated Compounds</i>
HIL	<i>Health-Based Soil Investigation Level</i>	VOC	<i>Volatile Organic Compounds</i>
LGA	<i>Local Government Area</i>		
NEHF	<i>National Environmental Health Forum</i>		
NEPC	<i>National Environmental Protection Council</i>		
NHMRC	<i>National Health and Medical Research Council</i>		
OCP	<i>Organochlorine Pesticides</i>		
OPP	<i>Organophosphate Pesticides</i>		
PAH	<i>Polycyclic Aromatic Hydrocarbon</i>		
PCB	<i>Polychlorinated Biphenyl</i>		
PID	<i>Photo Ionisation Detector</i>		
PQL	<i>Practical Quantitation Limit</i>		

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EXECUTIVE SUMMARY

Benviron Group was appointed by Illuminate Living to undertake a Detailed Site Investigation (DSI) for the property situated at 183 & 218 New Canterbury Road, Lewisham NSW ("the site").

Refer to **Figure 1** - Site Location and **Figure 2** - Site Plan

The site is currently occupied by a commercial property and a driveway area exist at the side of the buildings. The site is proposed to be redeveloped into medium density residential building. The Site Assessment forms part of SEPP 55 Guideline (Remediation of Land) with a proposed redevelopment to determine the end land-use suitability of the property.

Soils sampled across the Site were assessed against the Site Acceptance Criteria (SAC) provided by the National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013) Table 1A - Residential B.

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

A number of potential areas of environmental concerns were identified at the site, particularly:

- Historical uses;
- Carpark areas / driveways where leaks and spills from cars may have occurred;
- Vicinity of degrading building features

Laboratory Results for the soil samples were below detection limits or the relevant guideline criteria with the exception of Benzo(a)pyrene in samples BH5 0.2.

Laboratory Results for the groundwater samples were below detection limits and the relevant guideline criteria with the exception of Copper in GW1-GW3. This is not seen as cause for concern because concentrations are consistent in upgradient and downgradient wells and is most likely attributed to background concentrations.

Sources of this material are most likely associated with the fill materials which may have been present within this site. Data gaps that are to be addressed as part of this assessment include the following –

- Delineation of Hotspots and additional testing for Pesticides.

Off-site impacts of contaminants in soil are generally governed by the transport media available and likely receptor(s). The most common transport medium is water, whilst receptors include uncontaminated soils, groundwater, surface water bodies, humans, flora & fauna.

Surface water run-off from within the site would generally be deposited in the stormwater drainage pits and the potential for migration of contamination is low and any infiltration of contaminants is also expected to be low-moderate based on the underlying geology. The potential for significant impact of site soils, if contaminated, on the water bodies collecting surface water run-off from the region is considered low.

Based on the results of this investigation it is considered that the risks to human health and the environment associated with soil contamination at the site are low in the context of the proposed use of the site. The site therefore ***can be made suitable*** for the proposed development, subject to the following recommendations:

- Additional Investigation including the delineation of the identified hotspots and obtain data quality objectives.
- Preparation of a Remedial Action plan to deal with Hotspots in accordance with NSW EPA Guidance and the NEPM 2013.

If during any potential site works, significant odours and / or evidence of gross contamination (including asbestos) not previously detected are encountered, or any other significant unexpected occurrence, site works should cease in that area, at least temporarily, and the environmental consultant should be notified immediately to set up a response to this unexpected occurrence

Thank you for the opportunity of undertaking this work. We would be pleased to provide further information on any aspects of this report.

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1.0 INTRODUCTION

Benviron Group was appointed by Illuminate Living to undertake a Detailed Site Investigation (DSI) for the property situated at 183 & 218 New Canterbury Road, Lewisham NSW ("the site").

Refer to **Figure 1** - Site Location and **Figure 2** - Site Plan

The site is currently occupied by a commercial property and a driveway area exist at the side of the buildings. The site is proposed to be redeveloped into mixed use and high density residential building. The Site Assessment forms part of SEPP 55 Guideline (Remediation of Land) with a proposed redevelopment to determine the end land-use suitability of the property.

Soils sampled across the Site were assessed against the Site Acceptance Criteria (SAC) provided by the National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013) Table 1A - Residential B.

2.0 OBJECTIVE

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

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

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

The proposed investigation program and the Detailed Site Investigation are designed to assess the presence of any unacceptable on site or off site risk to human health or the environment. The report will draw conclusions regarding the land use suitability of the Site for the current commercial land use or provide recommendations to enable such conclusions and determine the need for a further assessment.

3.0 SCOPE OF WORKS

The scope of works for this Detailed Site Investigation (DSI) included:

- Collecting site information, review of historical information and past site practices, (site surveys, site records on waste management practices, NSW Land Titles Office records of ownership, aerial photographs obtained from the NSW Department of Lands, WorkCover NSW records and site interviews);
- A site inspection to identify areas of environmental concern, on-site waste disposal practices and location of sewers, drains, holding tanks, Underground Storage Tanks, Aboveground Storage Tanks and pits, spills and ground discolouration etc.;
- A targeted soil boring/sampling investigative study – formulating and conducting a sampling plan and borehole investigation; the soil samples are taken and submitted for analysis on particular contaminants;
- Laboratory analysis and results from sample analysis – findings and comparison to regulatory guidelines;
- Quality Assurance/Quality Control (QA/QC) – all QA/QC procedures were undertaken in accordance with the Benviron Group Quality Assurance/Quality Control manual;
- Interpretation of results and findings; and
- Recommendations and final conclusions drawn from interpretation of the results.

4.0 SITE IDENTIFICATION AND SITE HISTORY REVIEW

4.1.1 Site identification

The site is identified as follows:

Table 1: Site Identification Review

Site Identifier	Site Details	
Site Location	183 & 218 New Canterbury Road, Lewisham NSW	
Lot/DP	Lots 81 in DP748418 (183) and Lot 3 DP625664 (218)	
Parish	Petersham	
County	Cumberland	
Nearest Survey Marker	SS46936	
Site Area	183 New Canterbury Road = 1138m ² 218 New Canterbury Road = 2377m ²	
Local Government Area (LGA)	Marrickville Council	
Current Zoning	IN2 Light Industrial	
Proposed Zoning	183 New Canterbury Road = B6 Enterprise Corridor 218 New Canterbury Road = R4 High Density Residential	
Surrounding Land Uses	183 New Canterbury Road	
	<i>North</i>	Low Density Residential
	<i>South</i>	New Canterbury Road followed by Commercial
	<i>East</i>	Commercial (Officeworks)
	<i>West</i>	Low Density Residential
	218 New Canterbury Road	
	<i>North</i>	New Canterbury Road followed by Commercial
	<i>South</i>	Low Density Residential

Site Identifier	Site Details	
	East	Service Station and Mechanical Workshop
	West	Low Density Residential

Refer to **Figure 1 and Figure 2** – Site Locality Map and Site Plan

4.1.2 Review of Historical Maps

A review of the Petersham and Marrickville Map originally produced by Higinbotham & Robinson between 1885-1890 was undertaken. The map revealed that the site had no distinguishable features nor was it occupied by any major industry at the time of development.

4.1.3 Workcover Record Search

A review of WorkCover records indicated that an underground storage tank was previously located within number 183 new Canterbury road. No other records were noted for the rest of the site.

4.1.4 Underground Search

Dial Before You Dig' plans were requested and reviewed for the Site. Plans were provided by Ausgrid, Jemena Gas West, Sydney Water, Telstra NSW and council information for NSW. The plans provided for Ausgrid, Sydney Water & Telstra did not indicate the presence of any major underground services or utility easements at the Site with the exception of a stormwater easement through the middle of number 183.

4.1.5 Council Records

Based on a review of the Section 149 certificate for the site no constraints in regards to contamination was noted.

4.1.6 Review of aerial photographs

A number of aerial photographs obtained from the NSW Department of Lands were reviewed as part of this PESA. Copies of the aerial photographs are kept in the offices of Benviron Group and are available for examination upon request. The results of this review are presented in the following table:

Table 2 Review of Aerial Photographs

Year	Site		Surrounding areas
1943	Commercial	The site at number 183 is occupied by a commercial warehouse at the front of the property. Number 218 is occupied by a commercial warehouse at the front of the property	The surrounding area is mostly mixed commercial and residential.
1961	Commercial	The site at number 183 and 218 have been redeveloped consistent with what is currently located on site.	No major changes
1980	Commercial	No major changes	The surrounding area is becoming more densely populated.
2003	Commercial	No major changes.	No major changes
Current	As per inspection	The site is as inspected (section 5.2)	As per inspection

In summary, the aerial photographs reveal that the site has been commercial since at least 1943. The sites remain commercial in use to this day.

4.1.7 Title search

A review of historical documents held at the NSW Department of Lands offices was undertaken to characterise the previous land use and occupiers of the site.

Refer to **Appendix A** – Land Titles.

Table 3 Historical land title data

Year	Lots 81 DP748418	Company/Personal Occupation
1983-Current	Francesco and Angela Giunta	Tile Retailers
1979	Francesco, Santo and Angela Giunta	Company Directors (Tile)
1963	Airquip Machinery Pty Ltd	-
1951	Various Commercial Owners	Engineers
1949	Kent Shoes Pty Ltd	Shoe Makers
1949	Nancy and Robert Kent	Company Director
1927	Ken Peet	Artificail Flower Manufacturer
1927	Albert Matthew	Boot Manufacturer
1875	James Matthews	Bootmaker

Year	Lots 3 DP625664	Company/Personal Occupation
1989-Current	Francesco and Angela Giunta	Tile Retailers
1981	Beaumont Agencies Pty Ltd	-
1975	Mauri Brothers and Thompson Pty Ltd	Manufacturers
1954	SB Chapman and Co Pty Ltd	-
1953	Don Electrical Co Pty Ltd	-

Year	Lots 3 DP625664	Company/Personal Occupation
1922	Laws Limited	-
1921	Eliza, Rex and Rupert Law	Master Baker

In summary, the both sites have been owned and used for commercial purposes since the early 1900s, being mostly manufacturing in nature.

Refer to **Appendix A** – *Land Title Information*

4.1.8 Anecdotal Evidence

No Anecdotal Evidence was available at the time of the investigation.

4.1.9 NSW OEH records

The NSW OEH publishes records of contaminated sites under Section 58 of the Contaminated Land Management (CLM) Act 1997. The notices relate to investigation and/or remediation of site contamination considered to pose a significant risk of harm under the definition in the CLM Act.

A search of the database revealed that the subject site is not listed and no properties were listed within the suburb of Lewisham.

It should be noted that the OEH record of Notices for Contaminated Land does not provide a record of all contaminated land in NSW.

A search of the POEO Register revealed that the site was not listed.

Refer to **Appendix B** – NSW EPA Notice Summary & POEO Records.

4.1.10 Previous Reports

No previous reports could be identified for the properties as part of the investigation.

4.1.11 Summary of site history

In summary:

- Land title information shows that the site has been owned and used for commercial purposes since the early 1900s.
- The aerial photographs reveal that the site has been was previously commercial since at least 1943. The site remains commercial in use to this day.

4.1.12 Integrity Assessment

The information found in the historical sources has been found to be in general concurrence. It is therefore considered that accuracy of this data is acceptable for this investigation.

5.0 REVIEW OF ENVIRONMENTAL INFORMATION

Table 4: Site Condition and Surrounding Environment Review

Site Information	Descriptions
Sensitive Receivers within 500m	No sensitive receivers were identified within 500m of the site.
Topography (1:25,000)	After review of the topographical maps provided by the Land and Property information service (LPI) it was determined that the site area is generally flat with a slight slope of 5° to the north west.
Geological Profile	The Geological Map of Sydney (Geological Series Sheet 9130, Scale 1:100,000, 1983), published by the Department of Mineral Resources indicates the residual soils within the site to be underlain by Triassic Age Shale of the Wianamatta Group, comprising black to dark grey shale and laminate.
Presence of Acid Sulphate Soils (Review of NSW Department of Land & Water Conservation (DLWC) Acid Sulphate Soil Risk Maps (Edition Two, December 1997, Scale 1:250,000)).	A review of the aforementioned map indicated that there is a “No Known Occurrence ” of acid sulphate soil materials within the soil profile During site investigations no indicators of acid sulphate soils were identified.

Site Information	Descriptions				
Localised Hydrogeology	Number	Location	Depth	SWL	Use
	GW112803	2km N	6m	-	Monitoring
	-	-	-	-	-
	-	-	-	-	-
Nearest Surface Water Body	Hawthorne Canal – 500m NW				
Nearest Active Service Station	Approx 1km from the site				

6.0 REVIEW OF CONSTRUCTION AND SERVICE INFORMATION

6.1.1 Proposed Development

Table 5: Proposed Development Review

Item	Description
Proposed Development	Construction of a mixed use and high density development containing ground floor commercial tenancies and dwellings on the upper floors with associated site and public domain works and dedication of land for a public laneway
Proposed Basements (if any)	Double
Proposed Use	Mixed Use and High Density Residential Building
Density of Development	Medium
Types of End Users	Residents, Workers
DA Approval Number (if applicable)	N/A

Refer to **Appendix D - Proposed Development Plans**

7.0 SITE VISIT

7.1.1 General

The site was visited on 3rd, 4th and 7th of March 2016 by Benviron Group Environmental Scientists to inspect the site for any potential sources of contamination.

The following items were considered as part of the site visit:

- Description of the building structures;
- Site surroundings;
- Present and past industrial processes and operations at the site;
- Surface water, groundwater, stormwater and sewer;
- Present and past storage of chemicals and wastes associated with site use and their on-site location;
- Waste management practices and management of hazardous materials;
- Presence of Underground Storage Tanks or Above Ground Storage Tanks;
- Odour; and
- Occupational health and safety.

7.1.2 Site observations

At the time of the site visit the following observations were made as per the following table:

Table 6: Site Inspection Review

Factors Considered	Description
Buildings & Structures on Site	The sites were mostly irregular in shape was occupied by a brick and metal commercial properties with steel roofing. They were currently used in the storage and distribution of ceramic tiles.
Percentage Concrete Covered	100%
Concrete Condition	Good
Chemical Storage	None was noted on site.
Above and Underground Storage Tanks	USTs and ASTs were not identified within the site inspection.
Trade Waste Pits	No trade waste agreements or pits were identified for the building.
Nearby Electrical Transformers	No electrical transformers were identified within the site
Asbestos	Asbestos sheeting was identified within the building structures on site. The sheeting was in good condition.
Site Vegetation	Vegetation was apparent within the site and appeared healthy and free of stress.
Soil Staining and Odours	No odours were identified within the property. No significant soil staining was noted within the soil profile.
Stormwater and Sewer	Stormwater and sewage were connected to the local utilities.

Refer to **Figure 2** - Site Plans

8.0 CONCEPTUAL SITE MODEL (CSM)

Based on the above information, site history and site walkover, the areas of potential concern and associated contaminants for the site CSM were identified. These are summarised in the following table.

Areas and Contaminants of Concern

Known and potential contamination source	Associated Contaminants
<i>Historical Site Uses – Machinery and Shoe Manufacturing</i>	Heavy Metals, TRH, BTEX, PAH, OCP, PCB
<i>Former UST</i>	Heavy Metals, TRH, BTEX, PAH
<i>Imported Fill</i>	Heavy Metals, TRH, BTEX, PAH, OCP, PCB
<i>Carparking Areas</i>	TRH, BTEX, PAH
<i>Building degradation/ Demolition</i>	Heavy Metals

Potentially Contaminated Media

Potentially contaminated media present at the site may include:

Known and potential contamination source	Associated Contaminants
<i>Fill Material</i>	There is the potential for contamination to be present in the upper clay/sand fill material.
<i>Groundwater</i>	There is the potential for the leaching of contaminants into groundwater onsite and also migration of the contaminants.
<i>Ground Gas</i>	Given the neighbouring site history and the findings of previous investigations, ground gas on site it may be considered to be a potential contaminated medium.

Potential for Migration

Contaminants generally migrate from site via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The potential contaminants identified as part of the site history review, site inspection and previous report are present in solid (e.g. impacted fill, asbestos), liquid (e.g. dissolved in water) and gaseous/vapour forms.

Aerial photography has indicated that there are no unsealed ground surfaces and therefore, while there is the potential for migration of contaminants via wind-blown dust is unlikely.

Rainfall infiltration at the site is expected to occur in unsealed areas. There is therefore the potential that soil contamination could result in impacts to shallow groundwater.

Potential migration from the former brick pit was assessed as a potential concern with regards to vapour transmission.

Potential Exposure Pathways

Potential exposure pathways include:

- Dermal;
- Ingestion; and
- Inhalation.

Due to the presence of exposed potentially impacted soil/fill on ground surfaces, dermal exposure is considered a potential exposure pathway.

The potential for ingestion of soil is considered as a potential exposure pathway. Although groundwater is proposed to be used at the site, there is the potential, for ingestion of contaminants via groundwater removed from monitoring wells.

There is the potential for vapour to be present in the underlying profile within the site. As such, these gases potentially pose a risk to human health via the inhalation pathway.

The proposed development concerns the construction and development of a multistorey unit development with a double basement approximately. Because of this dermal and inhalation exposure pathways by potentially contaminated groundwater and vapour may occur.

Receptors

Potential receptors of environmental impact present within the site which will be required to be addressed with respect to the suitability of the site for the proposed use include:

- Excavation/construction/maintenance workers conducting activities at the site, who may potentially be exposed to COPCs through direct contact with impacted soils, Vapour Intrusion and/or groundwater present within excavations and/or inhalation of dusts/fibres associated with impacted soils;
- Future occupants/users of the site may potentially be exposed to COPCs through direct contact with impacted soils and/or ingestion of impacted soils and/or inhalation of dusts/fibres associated with impacted soils and/or exposure to vapour; and/or
- Offsite sensitive receptors of groundwater; and/or
- Flora species to be established on vegetated areas of the site.

Preferential Pathways

For the purpose of this assessment, preferential pathways have been identified as natural and/or man-made pathways that result in the preferential migration of COPCs as either liquids or gases.

Man-made preferential pathways are present throughout the site, generally associated with fill materials and services present beneath existing ground surface. Fill materials and service lines are anticipated to have a higher permeability than the underlying natural soil and/or bedrock.

9.0 REVIEW OF DATA QUALITY OBJECTIVES

The DQOs were also prepared using Appendix IV of the Site Auditor Guidelines. These require 7 steps. The steps being

- a. State the problem
- b. Identify the decisions
- c. Identify inputs to decision
- d. Define the study boundaries
- e. Develop a decision rule
- f. Specify limits on decision errors
- g. Optimise the design for obtaining data

9.1 State the Problem

The site requires to be confirmed suitable for the proposed development. The site is proposed to be redeveloped and has had some areas of potential concern, those being possible areas of imported fill of unknown origin, historical commercial uses, possible spraying of pesticides, degradation of the building materials and leakages from vehicles on site.

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

9.2 Identify the Decisions

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

The decisions made in completing this assessment are as follows:

- Does the site or is the site likely to present a risk of harm to humans or the environment
- Is the site currently suitable for the proposed land use being residential with minimal access
- Is there a potential for soil and groundwater contamination
- Is there a potential for offsite migration issues
- Does the sampling results meet the site criteria proposed
- If not, does the site require remediation works

9.3 Identify Inputs to Decision

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

- Existing site information

- Site history
- Regional geology, topography and hydrogeology
- Potential contaminants
- Proposed Land Use
- Site assessment criteria
- Results as measured against criteria

9.4 Define the Study Boundaries

Specific spatial and temporal aspects must be provided to identify the boundaries of the investigation and to identify any restrictions that may hinder the assessment process. The site is located at 183 & 218 New Canterbury Road, Lewisham NSW and is currently registered as Lots 81 DP748418 and Lot 3 DP625664. The site is approximately 1138m² and 2377m² in area respectively.

Refer to **Figure 1** - Site Locality and **Figure 2** – Site Layout Plan.

9.5 Develop a Decision Rule

The information obtained through this assessment will be used to characterise the soils and the groundwater on the site in terms of contamination issues and risks to human health and the environment. The decision rule in characterising the site will be as follows:

- Laboratory test results will be measured against the criteria provided within this report
- The site will be deemed suitable for the proposed use if the following criteria are fulfilled:

- o Soil and groundwater concentrations are within background levels
- o QA/QC shows data can be relied upon
- o Results generally meet regulatory criteria
- o Results are from NATA accredited laboratories
- o Detection limits are below assessment criteria
- o Results can be shown to be of minimal concern

9.6 Specify Limits on Decision Errors

The limits on decision errors for this assessment are as follows:

- The assessment criteria adopted from the guidelines within this report have risk probabilities already incorporated.
- The acceptable limits for inter/intra laboratory duplicate sample comparisons are laid out within our protocols.
- The acceptable limits for laboratory QA/QC parameters are based upon the laboratory reported acceptable limits and those stated within the NEPM 1999 Guidelines (2013 Amendment)

9.7 Optimise the Design for Obtaining Data

A resource-effective sampling and analysis design was undertaken for data collection that satisfies the DQO's. The sampling and analytical plan is designed to avoid Type 1 and Type 2 errors and includes defining minimum sample numbers required to detect contamination as determined with procedures provided in the NSW EPA 1995 Sampling Design Guidelines and AS 4482.1 - 2005 and appropriate quality control procedures.

Furthermore, only laboratories accredited by NATA for the analysis undertaken were used. The laboratory data was assessed from quality data calculated during this assessment. Field QA/QC protocols adopted and incorporate traceable documentation of procedures used in the sampling and analytical program and in data verification procedures.

10.0 SAMPLING PLAN AND FIELD SAMPLING QA/QC

During the supplementary contamination assessment the integrity of data collected is considered vital. With the assessment of the site, a number of measures were taken to ensure the quality of the data. These are as follows:

10.1.1 Sample Containers

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

10.1.2 Decontamination

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

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

Water sampling equipment consisted of single use disposable bailer and Low Flow Peristaltic pump with replaceable Teflon tubing.

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

Although Benviron Group maintains consistent sampling procedures, a rinsate sample is obtained to ensure false positive samples are not generated and that decontamination procedures are effective in preventing cross contamination. The Rinsate water is collected after being in contact generally with the trowel used for sampling. Analytical results that target the contaminants of concern are compared to a blank sample, which is taken directly from the rinsate water container supplied by the laboratory.

A rinsate sample was not collected as the samples were taken from each borehole using a push tube sampler which were replaced at each sample location and therefore the chance for cross-contamination was minimal.

10.1.3 Sample Tracking, Identification and Holding Times

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

10.1.4 Sample Transport

All samples were packed into an esky with ice from the time of collection. A trip blank and trip spike are collected where appropriate. These were transported under chain of custody from the site to Eurofins MGT Pty Ltd a NATA registered laboratory located in Lane Cove. During the project, the laboratory reported that all the samples arrived intact and were analysed within holding times for the respective analytes.

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

10.1.5 Trip Spike

Trip Spike samples were obtained from the laboratory prior to conducting field sampling where volatile substances are suspected. Benviron Group QA/QC procedures for the collection of environmental samples involves the collection of trip blanks, trip spikes and duplicate samples both intra and inter laboratory.

Trip Spike samples were collected as part of this investigation. Results indicate that no volatile hydrocarbons were present within the samples and therefore losses most likely would not have occurred.

10.1.6 Trip Blank

A trip blank accompanied the sampling for the sampling process and is not separated from the sample collection and transportation process. The purpose of the trip blank is to identify whether cross-contamination is occurring during the sample collection and transport process.

Trip Blank samples were collected as part of this investigation. Results indicate that no volatile hydrocarbons were present within the samples and therefore cross contamination most likely would not have occurred.

10.1.7 Field Duplicate Samples

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

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

Intra-Laboratory duplicate samples were not collected as part of this assessment due to damage to the samples during transport.

Intra Laboratory Duplicate

Four intra-laboratory duplicate sample (2 soil and 2 groundwater) was collected and analysed in order to assess the variation in analyte concentration between samples collected from the same sampling point. The duplicate sample frequency was computed using the total number of samples analysed as part of this assessment.

The duplicate sample frequencies computed are presented in the following table.

Table 7: Intra Laboratory Duplicate Frequencies

Analyte – Discrete Soil	Samples Analysed	Duplicate Samples	Frequency
Heavy Metals	30	2	6.7%
TPH/BTEX	30	2	6.7%
PAH	16	2	12.5%
OCP/PCB	16	2	12.5%
Analyte – Discrete Groundwater	Samples Analysed	Duplicate Samples	Frequency
Heavy Metals	7	2	29%
TPH/BTEX	7	2	29%
PAH	7	2	29%

The duplicate frequency for the analytical suite adopted complies with the NEPM, which recommends a duplicate frequency of at least 5%.

It is considered that the number of duplicate samples collected is adequate to assess the variation in analyte concentration between samples collected from the same sampling

point. A summary of the test results with the Relative Percentage Difference (RPD) is presented in the following tables.

Inter Laboratory Duplicate

Four inter-laboratory duplicate sample (2 soil and 2 groundwater) was collected and analysed in order to assess the variation in analyte concentration between laboratories in samples collected from the same sampling point. The duplicate sample frequency was computed using the total number of samples analysed as part of this assessment.

The duplicate sample frequencies computed are presented in the following table.

Table 8: Inter Laboratory Duplicate Frequencies

Analyte – Discrete Soil	Samples Analysed	Duplicate Samples	Frequency
Heavy Metals	30	2	6.7%
TPH/BTEX	30	2	6.7%
PAH	16	2	12.5%
OCP/PCB	16	2	12.5%
Analyte – Discrete Groundwater	Samples Analysed	Duplicate Samples	Frequency
Heavy Metals	7	2	29%
TPH/BTEX	7	2	29%
PAH	7	2	29%

The duplicate frequency for the analytical suite adopted complies with the NEPM, which recommends a duplicate frequency of at least 5%.

It is considered that the number of split samples collected is adequate to assess the variation in analyte concentration between samples collected from the same sampling point. A summary of the test results with the Relative Percentage Difference (RPD) is presented in the following tables.

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

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

The tables, below, give details of intra laboratory and inter laboratory duplicates.

Table 9: Intralab Soil Sample D1 RPDs

ANALYTE	BH3 0.8 mg/kg	INTRALAB D1 mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	4	5.2	26
Cadmium	0.9	< 0.4	-
Chromium	7.6	13	52
Copper	190	180	5
Lead	250	330	28
Mercury	0.23	0.33	36
Nickel	12	11	9
Zinc	320	200	46
TPH			
C6-C10	<25	<25	-
C10-C16	<50	<50	-
C16-C34	270	<100	-
C34-C40	<100	<100	-
BTEX			
Benzene	<0.2	<0.2	-
Toulene	<0.5	<0.5	-
Ethylbenzene	<2	<2	-
Xylenes - Total	<3	<3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	3.3	1.5	75
Total PAH	28	16	55
ORGANOCHLORINE PESTICIDES (OCP)			
Total OCP	<0.05	<0.05	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<0.5	<0.5	-

Table 10: Intralab Soil Sample D2 RPDs

ANALYTE	BH13 0.5 mg/kg	INTRALAB D2 mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	4.9	4.4	11
Cadmium	< 0.4	< 0.4	-
Chromium	14	11	24
Copper	59	38	43
Lead	340	220	43
Mercury	0.21	0.15	33
Nickel	16	14	13
Zinc	250	170	38
TPH			
C6-C9	<25	<25	-
C10-C14	<50	<50	-
C15-C28	<100	<100	-
C29-C36	<100	<100	-
BTEX			
Benzene	<0.2	<0.2	-
Toulene	<0.5	<0.5	-
Ethylbenzene	<2	<2	-
Xylenes - Total	<3	<3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	<0.05	<0.05	-
Total PAH	9.7	16	49
ORGANOCHLORINE PESTICIDES (OCP)			
Total OCP	<0.05	<0.05	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<0.5	<0.5	-

Table 11: Intralab Groundwater Sample D1 RPDs

ANALYTE	GW1 ug/l	DUPLICATE D1 ug/l	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	9	8	12
Cadmium	<0.5	<0.5	-
Chromium	23	20	14
Copper	50	43	15
Lead	61	50	20
Mercury	0.2	0.1	67
Nickel	<5	<5	-
Zinc	120	110	9
TPH			
C6-C10 (F1)	<20	<20	-
C10-C16 (F2)	<50	<50	-
C16-C34	<50	<50	-
C34-C40	<100	<100	-
BTEX			
Benzene	<1	<1	-
Toulene	<1	<1	-
Ethylbenzene	<1	<1	-
Xylenes - Total	<3	<3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	<1	<1	-
Naphthalene	<1	<1	-

Table 12: Intralab Groundwater Sample D2 RPDs

ANALYTE	GW5 ug/l	DUPLICATE D2 ug/l	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	92	55	50
Cadmium	4.4	2.6	51
Chromium	98	58	51
Copper	730	43	178
Lead	130	81	46
Mercury	0.6	0.4	40
Nickel	380	230	49
Zinc	3700	2100	55
TPH			
C6-C10 (F1)	<20	<20	-
C10-C16 (F2)	<50	<50	-
C16-C34	<50	<50	-
C34-C40	<100	<100	-
BTEX			
Benzene	<1	<1	-
Toulene	<1	<1	-
Ethylbenzene	<1	<1	-
Xylenes - Total	<3	<3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	<1	<1	-
Naphthalene	<1	<1	-

The comparisons between the inter-laboratory duplicates and corresponding original samples for soil indicated generally acceptable RPD overall, with the exception of concentrations of Arsenic, Cadmium, Chromium, Copper and Zinc which exceed the DQOs for this project, however this exceedance is not considered significant because the concentrations are low and most likely due to the heterogeneous soils which were sampled.

Table 13: Interlab Soil Sample SS1 RPDs

ANALYTE	BH3 0.8 mg/kg	INTERLAB SS1 mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	4	8	67
Cadmium	0.9	<0.4	-
Chromium	7.6	21	94
Copper	190	390	69
Lead	250	350	33
Mercury	0.23	0.3	26
Nickel	12	13	8
Zinc	320	260	21
TPH			
C6-C9	<25	<20	-
C10-C14	<50	<20	-
C15-C28	<100	<50	-
C29-C36	<100	<50	-
BTEX			
Benzene	<0.2	<0.1	-
Toulene	<0.5	<0.1	-
Ethylbenzene	<2	<0.1	-
Xylenes - Total	<3	<0.3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	3.3	2.1	-
Total PAH	28	28	0
ORGANOCHLORINE PESTICIDES (OCP)			
Total OCP	<0.05	<1	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<0.5	<1	-

Table 14: Interlab Soil Sample SS2 RPDs

ANALYTE	BH13 0.5 mg/kg	INTERLAB SS2 mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	4.9	9	59
Cadmium	< 0.4	<0.4	-
Chromium	14	20	35
Copper	59	49	19
Lead	340	500	38
Mercury	0.21	0.3	35
Nickel	16	10	46
Zinc	250	190	27
TPH			
C6-C9	<25	<20	-
C10-C14	<50	<20	-
C15-C28	<100	<50	-
C29-C36	<100	<50	-
BTEX			
Benzene	<0.2	<0.1	-
Toulene	<0.5	<0.1	-
Ethylbenzene	<2	<0.1	-
Xylenes - Total	<3	<0.3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	<0.05	1	-
Total PAH	9.7	12	21
ORGANOCHLORINE PESTICIDES (OCP)			
Total OCP	<0.05	<1	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<0.5	<1	-

Table 15: Interlab Groundwater Sample SS1 RPDs

ANALYTE	GW1 ug/l	SPLIT SS1 ug/l	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	9	<1	-
Cadmium	<0.5	<0.1	-
Chromium	23	<1	-
Copper	50	<1	-
Lead	61	<1	-
Mercury	0.2	<0.05	-
Nickel	<5	2	-
Zinc	120	64	61
TPH			
C6-C10 (F1)	<20	<20	-
C10-C16 (F2)	<50	<50	-
C16-C34	<50	<50	-
C34-C40	<100	<100	-
BTEX			
Benzene	<1	<1	-
Toulene	<1	<1	-
Ethylbenzene	<1	<1	-
Xylenes - Total	<3	<3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	<1	<1	-
Naphthalene	<1	1	-

Table 16: Interlab Groundwater Sample SS2 RPDs

ANALYTE	GW5 ug/l	SPLIT SS2 ug/l	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	92	<1	-
Cadmium	4.4	0.2	183
Chromium	98	<1	-
Copper	730	2	199
Lead	130	<1	-
Mercury	0.6	<0.05	-
Nickel	380	53	151
Zinc	3700	100	189
TPH			
C6-C10 (F1)	<20	<20	-
C10-C16 (F2)	<50	<50	-
C16-C34	<50	<50	-
C34-C40	<100	<100	-
BTEX			
Benzene	<1	<1	-
Toulene	<1	<1	-
Ethylbenzene	<1	<1	-
Xylenes - Total	<3	<3	-
POLYCYCLIC HYDROCARBONS (PAH)			
Benzo(a)pyrene	<1	<1	-
Naphthalene	<1	<1	-

The comparisons between the inter-laboratory duplicates and corresponding original samples for soil indicated generally acceptable RPD overall, with the exception of concentrations of Cadmium, Copper, Nickel and Zinc which exceed the DQOs for this project, however this exceedance is not considered significant because the concentrations are low and most likely due to the heterogeneous soils which were sampled.

Field duplicates provide an indication of the whole investigation process, including the sampling process, sample preparation and analysis. The accuracy of the data is considered to be adequate due to the effect on confidence intervals with low concentrations in the samples and their duplicates.

11.0 LABORATORY QA/QC

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

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

Refer to **Appendix C- NATA Accredited Analytical Results**

11.1.1 Blanks

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

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

11.1.2 Spikes and Control Samples

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

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

11.1.3 Duplicates

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

11.1.4 Surrogates

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

11.1.5 Laboratory Detection Limits

Laboratory detection limits for soil and water analyses by Eurofins MGT are outlined in the results table in section 13 below.

12.0 SITE ASSESSMENT CRITERIA

12.1.1 Health Investigation Levels (HIL)s and Health Screening Levels (HSLs)

To assess the contamination status of soils at a site, the NSW EPA refers to the document entitled National Environmental Protection Council (1999) *National Environmental Protection (Assessment of Site Contamination) Measure* (NEPM) (Amendment 2013).

The site is to be redeveloped for a residential unit/townhouse development, so the site will be assessed against the NEPM exposure scenario 'Residential B' health investigation levels (HIL) of the above mentioned guidelines for '*residential land use with minimal soil access*'.

For assessing TRH and BTEX contamination at sites used for sensitive land use, such as residential, the NEPM refers to the Health Screening Levels (HSLs) "*HSL A and HSLB*".

For standard residential sites, the NSW DEC (2006) "*Guidelines for the NSW Site Auditor Scheme*" notes that concentrations at the site should also be assessed against the ecological investigation levels (EIL) if some parts of the site are used for growing plants or grass.

The soil regulatory guidelines are presented in the Table below.

Table 17: Health Investigation Levels (HIL) Criteria for Soil Contaminants

	Residential B	Reference
Heavy Metals		
Arsenic	500	NEPM 2013 - Table 1(A)1 HILs
Beryllium	90	NEPM 2013 - Table 1(A)1 HILs
Boron	40000	NEPM 2013 - Table 1(A)1 HILs
Cadmium	150	NEPM 2013 - Table 1(A)1 HILs
Chromium (VI)	500	NEPM 2013 - Table 1(A)1 HILs
Cobalt	600	NEPM 2013 - Table 1(A)1 HILs
Copper	30000	NEPM 2013 - Table 1(A)1 HILs
Lead	1200	NEPM 2013 - Table 1(A)1 HILs
Manganese	14000	NEPM 2013 - Table 1(A)1 HILs
Mercury (Inorganic)	120	NEPM 2013 - Table 1(A)1 HILs
Methyl Mercury	30	NEPM 2013 - Table 1(A)1 HILs
Nickel	1200	NEPM 2013 - Table 1(A)1 HILs
Selenium	1400	NEPM 2013 - Table 1(A)1 HILs
Zinc	60000	NEPM 2013 - Table 1(A)1 HILs
Cyanide (Free)	300	NEPM 2013 - Table 1(A)1 HILs
Polycyclic Aromatic Hydrocarbons (PAHs)		
Carcinogenic PAHs (as Bap TEQ)	4	NEPM 2013 - Table 1(A)1 HILs
Total PAHs	400	NEPM 2013 - Table 1(A)1 HILs
Organochlorine Pesticides		
DDT + DDE + DDD	600	NEPM 2013 - Table 1(A)1 HILs
Aldrin + Dieldrin	10	NEPM 2013 - Table 1(A)1 HILs
Chlordane	90	NEPM 2013 - Table 1(A)1 HILs
Endosulfan	400	NEPM 2013 - Table 1(A)1 HILs
Heptachlor	10	NEPM 2013 - Table 1(A)1 HILs
HCB	15	NEPM 2013 - Table 1(A)1 HILs
Phenols		
Phenols	45000	NEPM 2013 - Table 1(A)1 HILs
Pentachlorophenol	130	NEPM 2013 - Table 1(A)1 HILs
Cresols	4700	NEPM 2013 - Table 1(A)1 HILs
Polychlorinated Biphenyls (PCBs)		
PCBs	1200	NEPM 2013 - Table 1(A)1 HILs
Other Pesticides		
Atrazine	470	NEPM 2013 - Table 1(A)1 HILs
Chlorpyrifos	340	NEPM 2013 - Table 1(A)1 HILs
Bifenthrin	840	NEPM 2013 - Table 1(A)1 HILs
Herbicides		
2,4,5-T	900	NEPM 2013 - Table 1(A)1 HILs
2,4-D	1600	NEPM 2013 - Table 1(A)1 HILs
MCPA	900	NEPM 2013 - Table 1(A)1 HILs
MCPB	900	NEPM 2013 - Table 1(A)1 HILs
Mecoprop	900	NEPM 2013 - Table 1(A)1 HILs
Picloram	6600	NEPM 2013 - Table 1(A)1 HILs
Other Organics		
PDBE (Br1-Br9)	2	NEPM 2013 - Table 1(A)1 HILs

Note - All values are in mg/kg

Asbestos

The following health screening levels for asbestos can be seen below:

Table 18: Health Investigation Levels (HIL) Criteria for Asbestos

	Health Screening Levels (w/w)			
Form of Asbestos	Residential A	Residential B	Recreational C	Commercial/Industrial D
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF (Friable Asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

For selection of the health screening criteria an assessment of the in-situ soil profile should be undertaken. The soil criteria indicates that the upper soil profile is more consistent with clay.

Table 19: Health Screening Levels (HSL) Criteria

	HSL A & HSL B	HSL A & HSL B	HSL A & HSL B	HSL A & HSL B	Soil Saturation Concentration (Csat)	Reference
	0m to <1m	1m to <2m	2m to <4m	4m+		
CLAY						
Toluene	480	NL	NL	NL	630	NEPM 2013 - Table 1(A) 3 HSLs
Ethylbenzene	NL	NL	NL	NL	68	NEPM 2013 - Table 1(A) 3 HSLs
Xylenes	110	310	NL	NL	330	NEPM 2013 - Table 1(A) 3 HSLs
Naphthalene	5	NL	NL	NL	10	NEPM 2013 - Table 1(A) 3 HSLs
Benzene	0.7	1	2	3	430	NEPM 2013 - Table 1(A) 3 HSLs
F1	50	90	150	290	850	NEPM 2013 - Table 1(A) 3 HSLs
F2	280	NL	NL	NL	560	NEPM 2013 - Table 1(A) 3 HSLs

Note - All values are in mg/kg

The EPA guidelines indicate that the assessment of soil test results and comparison with defined soil criteria should include consideration of a number of factors such as:

1. Land uses, e.g. residential, agricultural/horticultural, recreation or commercial/industrial.
2. Potential child occupancy.
3. Potential environmental effects including leaching into groundwater.
4. Single or multiple contaminants.
5. Depth of contamination.
6. Level and distribution of contamination.
7. Bioavailability of contaminant(s), e.g. Related to speciation, route of exposure.
8. Toxicological assessment of the contaminant(s), e.g. Toxicokinetics, carcinogenicity, acute and chronic toxicity.
9. Physico-chemical properties of the contaminant(s).
10. State of the site surface, e.g. paved or grassed exposed.
11. Potential exposure pathways.
12. Uncertainties with the sampling methodology and toxicological assessment.

12.1.2 Ecological Investigation Levels (EIL)s and Ecological Screening Levels (ESLs)

Ecological Investigation Levels (EILs) -

The NEPM 2013 states that "Ecological investigation levels (EILs) for the protection of terrestrial ecosystems have been derived for common contaminants in soil based on a species sensitivity distribution (SSD) model developed for Australian conditions. EILs have been derived for As, Cu, CrIII, DDT, naphthalene, Ni, Pb and Zn

Insufficient data was available to derive ACLs for arsenic (As), DDT, lead (Pb) and naphthalene. As a result, the derived EILs are generic to all soils and are presented as total soil contaminant concentrations in Tables 1B(4) and 1B(5) within the NEPM 2013.

For the purposes of EIL derivation, a contaminant incorporated in soil for at least two years is considered to be aged for the purpose of EIL derivation. The majority of contaminated sites are likely to be affected by aged contamination. Fresh contamination is usually associated with current industrial activity and chemical spills".

The following process describes the method for calculation of site specific EILs.

A. EILs for Ni, Cr III, Cu, Zn and Pb aged contamination (>2 years)

Steps 1–4 below describe the process for deriving site-specific EILs for the above elements using Tables 1B(1) – 1B(4), which can be found at the end of the NEPM 2013.

1. Measure or analyse the soil properties relevant to the potential contaminant of concern (pH, CEC, organic carbon, clay content). Sufficient samples need to be taken for these determinations to obtain representative values for each soil type in which the contaminant occurs.
2. Establish the sample ACL for the appropriate land use and with consideration of the soil-specific pH, clay content or CEC. The ACL for Cu may be determined by pH or CEC and the lower of the determined values should be selected for EIL calculation. Note that the ACL for Pb is taken directly from Table 1(B)4.

3. Calculate the contaminant ABC in soil for the particular contaminant and location from a suitable reference site measurement or other appropriate method.
4. Calculate the EIL by summing the ACL and ABC:

$$\text{EIL} = \text{ABC} + \text{ACL}$$

B. EILs for As, DDT and naphthalene

EILs for aged contamination for DDT and naphthalene are not available and the adopted EIL is based on fresh contamination taken directly from Table 1B(5). The EILs for As, DDT and naphthalene are generic i.e. they are not dependent on soil type and are taken directly from Table 1B(5). Only EILs for fresh contamination are available for As, DDT and naphthalene due to the absence of suitable data for aged contaminants.

Ecological Screening Levels (ESLs) -

Ecological screening levels (ESLs) are presented based on a review of Canadian guidance for petroleum hydrocarbons in soil and application of the Australian methodology (Schedule B5b) to derive Tier 1 ESLs for BTEX, benzo(a)pyrene and F1 and F2 (Warne 2010a, 2010b)

The Canadian Council of the Ministers of the Environment (CCME) has adopted risk-based TPH standards for human health and ecological aspects for various land uses in the *Canada-wide standard for petroleum hydrocarbons (PHC) in soil* (CCME 2008) (CWS PHC). The standards established soil values including ecologically based criteria for sites affected by TPH contamination for coarse- and fine-grained soil types

Table 20: Ecological Investigation Levels (EIL) and Ecological Screening Levels (ESL)**Criteria**

	Contaminant Age/Soil Texture	National parks and areas of high conservation value	Urban residential and open public spaces	Commercial and industrial	Reference
Ecological Investigation Levels (EILs)					
Heavy Metals					
Arsenic	Fresh	20	50	80	NEPM 2013 - Table 1(B) 1-5 EILs
	Aged	40	100	160	NEPM 2013 - Table 1(B) 1-5 EILs
Chromium (III)	Fresh	Site Specific Calculation Required			NEPM 2013 - Table 1(B) 1-5 EILs
	Aged				NEPM 2013 - Table 1(B) 1-5 EILs
Copper	Fresh	Site Specific Calculation Required			NEPM 2013 - Table 1(B) 1-5 EILs
	Aged				NEPM 2013 - Table 1(B) 1-5 EILs
Lead	Fresh	110	270	440	NEPM 2013 - Table 1(B) 1-5 EILs
	Aged	470	1100	1800	NEPM 2013 - Table 1(B) 1-5 EILs
Nickel	Fresh	Site Specific Calculation Required			NEPM 2013 - Table 1(B) 1-5 EILs
	Aged				NEPM 2013 - Table 1(B) 1-5 EILs
Zinc	Fresh	Site Specific Calculation Required			NEPM 2013 - Table 1(B) 1-5 EILs
	Aged				NEPM 2013 - Table 1(B) 1-5 EILs
Polycyclic Aromatic Hydrocarbons (PAHs)					
Naphthalene	Fresh	10	170	370	NEPM 2013 - Table 1(B) 1-5 EILs
	Aged	10	170	370	NEPM 2013 - Table 1(B) 1-5 EILs
Organochlorine Pesticides					
DDT	Fresh	3	180	640	NEPM 2013 - Table 1(B) 1-5 EILs
	Aged	3	180	640	NEPM 2013 - Table 1(B) 1-5 EILs
Ecological Screening Levels (ESLs) and Management Limits					
F1 (C ₆ -C ₁₀)	Coarse	125*	180*	215*	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine				NEPM 2013 - Table 1(B) 6-7 EILs
F1 (C ₆ -C ₁₀) (Management Limits)	Coarse	-	700	700	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine		800	800	NEPM 2013 - Table 1(B) 6-7 EILs
F2 (>C ₁₀ -C ₁₆)	Coarse	25*	120*	170*	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine				NEPM 2013 - Table 1(B) 6-7 EILs
F2 (>C ₁₀ -C ₁₆) (Management Limits)	Coarse	-	1000	1000	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine		1000	1000	NEPM 2013 - Table 1(B) 6-7 EILs
F3 (>C ₁₆ -C ₃₄)	Coarse	-	300	1700	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine		1300	2500	NEPM 2013 - Table 1(B) 6-7 EILs
F3 (>C ₁₆ -C ₃₄) (Management Limits)	Coarse	-	2500	3500	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine		3500	5000	NEPM 2013 - Table 1(B) 6-7 EILs
F4 (>C ₃₄ -C ₄₀)	Coarse	-	2800	3300	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine		5600	6600	NEPM 2013 - Table 1(B) 6-7 EILs
F4 (>C ₃₄ -C ₄₀) (Management Limits)	Coarse	-	10000	10000	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine		10000	10000	NEPM 2013 - Table 1(B) 6-7 EILs
Benzene	Coarse	10	50	75	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine	10	65	95	NEPM 2013 - Table 1(B) 6-7 EILs
Toluene	Coarse	10	85	135	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine	65	105	135	NEPM 2013 - Table 1(B) 6-7 EILs
Ethylbenzene	Coarse	1.5	70	165	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine	40	125	185	NEPM 2013 - Table 1(B) 6-7 EILs
Xylenes	Coarse	10	105	180	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine	1.6	45	95	NEPM 2013 - Table 1(B) 6-7 EILs
Benzo(a)pyrene	Coarse	0.7	0.7	0.7	NEPM 2013 - Table 1(B) 6-7 EILs
	Fine	0.7	0.7	0.7	NEPM 2013 - Table 1(B) 6-7 EILs

Notes

- Urban residential/public open space is broadly equivalent to the HIL-A, HIL-B and HIL-C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.
- Aged values are applicable to arsenic contamination present in soil for at least two years. For fresh contamination refer to Schedule B5c.
- Insufficient data was available to calculate aged values for DDT and naphthalene, consequently the values for fresh contamination should be used.
- Insufficient data was available to calculate ACLs for As, DDT and naphthalene. The EIL should be taken directly from Table 1B(5).
- ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability.
- '-' indicates that insufficient data was available to derive a value.
- To obtain F1, subtract the sum of BTEX concentrations from C6-C10 fraction and subtract naphthalene from >C10-C16 to obtain F2.
- Management limits are applied after consideration of relevant ESLs and HSLs
- Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.

Based on the proposed development the bulk of site soils >2m in depth are likely to be excavated and removed offsite. It is therefore unlikely that ecological receptors will be impacted and therefore no calculation of EILs or ESLs is required. It is also noted that future plans may change and that some soils may remain. If this is the case then further investigation for EIL and ESLs should be undertaken once design is completed.

12.1.3 Groundwater

The NSW DECC has endorsed the use of the Groundwater Investigation Levels (GILs) given in the 1999 NEPM *'Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater'* (Amendment 2013) and the water quality trigger levels given in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC & ARMCANZ, 2000). These Guidelines provide criteria for:

- Aquatic ecosystems – both marine and fresh waters

The NEPM advises that *'when assessing groundwater contamination, the GILs are to be applied at the point of extraction and as response levels at the point of use, or where there is a likelihood of an adverse environmental effect at the point of discharge'*.

For assessing groundwater quality, it is first necessary to assess the potential uses of groundwater downgradient of the site being assessed.

Potential uses of groundwater downgradient of the site include:

- Discharge to water bodies sustaining aquatic ecosystems particularly Hawthorne Canal.

The threshold concentrations presented in the ANZECC (2000) Fresh and Marine Waters Quality Guidelines are considered applicable for the protection of aquatic ecosystems of the receiving waters. As these guidelines apply to receiving waters, it is generally conservative to apply these to groundwater discharging to receiving waters. It is important to note that these are not threshold values at which an environmental problem is likely to occur if exceeded, rather, if the trigger values are exceeded, then further action is required which may include either further site-specific investigations to assess whether or not there is an actual problem or management / remedial action should be undertaken.

It is considered that fresh water trigger values are applicable for investigating chemical concentrations in groundwater at the site, as the receiving body, Hawthorne Canal is a Estuarine water body .It is understood that the NSW EPA policy is that the trigger values for the protection of 95% of aquatic ecosystems should be used as groundwater assessment criteria when considering moderately or highly disturbed receiving environments. The receiving waters for groundwater at the site are considered to be moderately disturbed ecosystems and the ANZECC (2000) 95% protection values are therefore considered appropriate groundwater assessment criteria for the site.

13.0 SITE ASSESSMENT

Samples were recovered from sixteen (16) locations across the site and were labelled BH1-BH16. These locations were selected to detect any contamination that may have originated from past and present activities, and due to potential excavation and future development in these areas.

Table 21: Sampling Information - Soil

Analyte / Analyte Group		SAMPLING DATE	DUPLICATE & SPLIT	HEAVY METALS	TRH	BTEX	PAH	OCP	PCB	ASBESTOS
Sample	Depth (m)									
BH1	0.5	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH1	3.1	3/03/2016		✓	✓	✓				
BH2	0.4	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH2	2.3	3/03/2016		✓	✓	✓				
BH3	0.8	3/03/2016	D1 & SS1	✓	✓	✓	✓	✓	✓	✓
BH3	2.1	3/03/2016		✓	✓	✓				
BH4	0.3	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH4	1.4	3/03/2016		✓	✓	✓				
BH5	0.4	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH5	1.8	3/03/2016		✓	✓	✓				
BH6	0.4	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH6	1.5	3/03/2016		✓	✓	✓				
BH7	0.2	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH7	1.6	3/03/2016		✓	✓	✓				
BH8	0.5	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH9	0.3	3/03/2016		✓	✓	✓	✓	✓	✓	✓
BH10	0.8	4/03/2016		✓	✓	✓	✓	✓	✓	✓
BH10	3	4/03/2016		✓	✓	✓				
BH11	1.2	4/03/2016		✓	✓	✓	✓	✓	✓	✓
BH11	5	4/03/2016		✓	✓	✓				
BH12	0.4	4/03/2016		✓	✓	✓	✓	✓	✓	✓
BH12	4.2	4/03/2016		✓	✓	✓				
BH13	0.5	4/03/2016	D2 & SS2	✓	✓	✓	✓	✓	✓	✓
BH13	1.2	4/03/2016		✓	✓	✓				
BH14	0.5	4/03/2016		✓	✓	✓	✓	✓	✓	✓
BH14	1.3	4/03/2016		✓	✓	✓				
BH15	0.4	4/03/2016		✓	✓	✓	✓	✓	✓	✓
BH15	1.5	4/03/2016		✓	✓	✓				
BH16	0.6	4/03/2016		✓	✓	✓	✓	✓	✓	✓
BH16	1.4	4/03/2016		✓	✓	✓				

The locations of the boreholes and samples are shown in **Figure 2 –Site Plans** and details of the boreholes are presented in **Appendix E – Borehole Logs**.

Based on information from all boreholes, the surface and sub-surface profile across the site is generalised as follows:

- Fill Silty Sand, medium to fine grained, brown with some inert building materials
- Natural, Silty Clay, high plasticity, red/brown, moist.

13.1 Asbestos Assessment

The initial investigation carried out in the 3rd and 4th March 2016 was carried out as part of the borehole investigation. In order to investigate the presence of asbestos within the subsurface soils the following method was undertaken:

- A review of data previously collected including site history, aerial photographs, and site walkovers was undertaken in order to characterise the site and identify areas which may have been potentially impacted areas.
- This information was utilised to sample judgmentally based on the assessment of the site history in accordance with ASC NEPM (2013) and the WA DoH Guidelines for the Assessment and Management of Asbestos Contaminated Sites in Western Australia. During the investigation this was modified slightly in some areas in order to allow additional samples to be collected in locations where soils were to remain outside the building footprint.
- A 10L sample was collected from the surface stratum at depths between 0.0-0.3m BGL within the borehole and was spread out on a contrasting colour

material (white plastic) for inspection of asbestos fragments. Based on the current site layout and proposed site basement area six (6) soil samples were collected for inspection.

- After screening of this material, 500ml soil samples were collected from the boreholes between 0.0m and 0.3m BGL at depth within the fill materials where potential contamination was suspected. Soil Samples were not collected within the natural soil profile as based on a review of previous site factors and sampling it was not expected that contamination would occur within this profile.

Refer to Site Plan

13.2 Groundwater Assessment

During the investigation samples were recovered from seven (7) groundwater wells within the site in order to characterise the underlying groundwater conditions.

Table 22: Laboratory Groundwater Sampling Information

Analyte / Analyte Group		SAMPLING DATE	DUPLICATE & SPLIT	HEAVY METALS	TRH	BTEX	PAH
Sample	Depth (m)						
GW1	-	7/03/2016	D1 & SS1	✓	✓	✓	✓
GW2	-	7/03/2016		✓	✓	✓	✓
GW3	-	7/03/2016		✓	✓	✓	✓
GW4	-	7/03/2016		✓	✓	✓	✓
GW5	-	7/03/2016	D2 & SS2	✓	✓	✓	✓
GW6	-	7/03/2016		✓	✓	✓	✓
GW7	-	7/03/2016		✓	✓	✓	✓

The locations of the groundwater wells and samples are shown in **Figure 2 –Site Plans** and details of the boreholes are presented in **Appendix E – Borehole Logs**.

Groundwater Monitoring Well Installation

Drilling and installation of the monitoring well was carried out on the 3rd and 4th March 2016, using a solid stem auger drilling technique, under supervision of Benviron Group.

Upon inspection after drilling was completed, approximately water was found to be present in the GW1 borehole. A monitoring well was then installed with a 3.0 meter screen across the natural silty clay horizons and across the anticipated resting water level (based on seepage levels), to allow inspection for the presence of Light and Dense Non-Aqueous Phase Liquids (LNAPL & DNAPL). A sand filter pack was installed around

and slightly above the screen with a bentonite/grout seal to the surface above and the additional depth of the well. The well was finished above ground for ease of access. The drilling location was then cleaned up and left in a safe condition, not presenting a trip hazard to site users.

Approximately one hour after installation, groundwater was identified, with the use of an electronic measuring tape, at levels identified in the below table. The monitoring well was subsequently developed to ensure that a satisfactory link between the aquifer and the well was established. The entire saturated length of the screened interval was developed using a decontaminated 12v submersible pump, with a total of 5 L extracted from the well. This method was repeated for the remaining wells.

Groundwater Sample Collection

After installation the wells were allowed to settle for several days before sampling. Prior to sampling, the resting water level was recorded within the well while checking for the presence of phase separated hydrocarbon with the use of a Heron Interface Meter.

No phase separated hydrocarbons were detected during the investigations within the site.

Sampling was completed using a MicroPurge™ pump – a low flow/minimum drawdown sampling technique used to minimise any disturbance to the aquifer. Field measured parameters were collected using a certified and calibrated TPS 90FLMV water quality meter. Samples were collected when field measured parameters (pH, electrical conductivity, redox potential, dissolved oxygen and temperature) had stabilised. The samples were placed into appropriate laboratory supplied bottles and preserved on ice. The MicroPurge™ pump and other sampling equipment were decontaminated before

and after use to avoid possible cross contamination. All samples collected were preserved on ice and couriered directly to the laboratory under COC documentation.

Groundwater Investigation Observations

The Standing Water Level (SWL) was measured prior to sampling. The field measured parameters (pH), electrical conductivity (EC), redox potential, dissolved oxygen (DO) and temperature recorded during purging, were allowed to stabilise prior sampling. Final stabilised groundwater field parameters are summarised in below.

Table 23: Groundwater Field Results

	Date	pH	Electrical Conductivity (EC) us/cm	Redox Potential	Dissolved Oxygen	Temperature (°C)
GW1	7.03.16	6.4	1750	6.2	2.4	19
GW2	7.03.16	6.3	1586	4.2	1.8	18
GW3	7.03.16	6.4	5243	152.1	7.1	19
GW4	7.03.16	6.5	6412	213.1	7.5	19
GW5	7.03.16	6.5	1214	156.4	11.5	18
GW6	7.03.16	6.5	1613	36.1	14.1	19
GW7	7.03.16	6.5	1563	42.1	8.1	19

The groundwater was initially orange/brown in colour with a high sediment load and turbidity, which cleared completely after 10 L had been removed. No odour, hydrocarbon sheen or separate phase product was identified at the well. Excess water that was purged was collected and disposed of offsite at an authorised disposal facility.

14.0 RESULTS

14.1.1 Soils

The original laboratory test results certificates are presented in **Appendix C – NATA Laboratory Test Results**. A summary of the test results together with the assessment criteria adopted are discussed below.

Table 24: Heavy Metals Results

			Heavy Metals (mg/kg)							
			ARSENIC ²	CADMIUM	CHROMIUM (VI)	COPPER	LEAD ³	MERCURY (inorganic) ⁴	NICKEL	ZINC
Health Investigation Levels (HIL)										
Residential B¹			500	150	500	30000	1200	120	1200	60000
Limit of Resolution (LOR)			2	0.4	5	5	5	0.05	5	5
Sample ID	Date Sampled	Depth								
BH1	3/03/2016	0.5	3.6	0.4	16	47	560	0.13	7.4	400
BH1	3/03/2016	3.1	16	<0.4	13	<5	12	<0.05	<5	<5
BH2	3/03/2016	0.4	<2	0.6	23	120	68	<0.05	150	130
BH2	3/03/2016	2.3	18	<0.4	20	<5	10	<0.05	<5	<5
BH3	3/03/2016	0.8	4	0.9	7.6	190	250	0.23	12	320
BH3	3/03/2016	2.1	4.1	<0.4	<5	12	<5	0.18	<5	<5
BH4	3/03/2016	0.3	3.8	<0.4	8.9	35	32	<0.05	20	47
BH4	3/03/2016	1.4	5.9	<0.4	7.6	<5	9.4	<0.05	<5	<5
BH5	3/03/2016	0.4	7	<0.4	10	31	37	<0.05	20	72
BH5	3/03/2016	1.8	5.1	<0.4	<5	<5	10	<0.05	<5	<5
BH6	3/03/2016	0.4	13	<0.4	20	46	610	0.15	12	370
BH6	3/03/2016	1.5	<2	<0.4	<5	5.1	10	<0.05	<5	<5
BH7	3/03/2016	0.2	12	<0.4	22	20	97	0.06	<5	47
BH7	3/03/2016	1.6	2.8	<0.4	5.3	<5	12	<0.05	<5	<5
BH8	3/03/2016	0.5	9.9	<0.4	12	38	33	<0.05	27	97
BH9	3/03/2016	0.3	7.3	<0.4	10	29	27	<0.05	22	79
BH10	4/03/2016	0.8	8.1	<0.4	21	45	310	0.26	6.8	160
BH10	4/03/2016	3	6.3	<0.4	10	17	22	<0.05	<5	29
BH11	4/03/2016	1.2	5.7	<0.4	15	<5	19	<0.05	<5	24
BH11	4/03/2016	5	5.6	<0.4	5.4	9.9	12	<0.05	<5	21
BH12	4/03/2016	0.4	<2	<0.4	7.1	20	58	<0.05	6.5	38
BH12	4/03/2016	4.2	5.4	<0.4	7.5	13	52	<0.05	<5	13
BH13	4/03/2016	0.5	4.9	<0.4	14	59	340	0.21	16	250
BH13	4/03/2016	1.2	6.6	<0.4	8.2	15	49	<0.05	<5	9.4
BH14	4/03/2016	0.5	5.6	<0.4	13	28	200	0.19	5.7	120
BH14	4/03/2016	1.3	3.3	<0.4	6.3	<5	47	<0.05	<5	21
BH15	4/03/2016	0.4	3.6	0.5	7.7	95	420	0.15	12	250
BH15	4/03/2016	1.5	<2	<0.4	<5	<5	9.2	<0.05	<5	<5
BH16	4/03/2016	0.6	3.2	0.5	7.3	96	410	0.11	7.5	150
BH16	4/03/2016	1.4	6.3	<0.4	5.5	11	26	<0.05	<5	7.8

Notes	1	HIL A - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare 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 apartments HIL C - Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space where the potential for exposure is lower and where a site-specific assessment may be more appropriate HIL D - Commercial/Industrial, includes premises such as shops, offices, factories and industrial sites
	2	Arsenic: HIL assumes 70% oral bioavailability. Site specific bioavailability may be important and should be considered where appropriate (refer Schedule 7b)
	3	Lead: HIL is based on blood lead models (IEUBK for HILs A, B and C and adult lead model for HIL D where 50% oral bioavailability has been considered. Site-specific bioavailability may be important and should be considered where appropriate.
	4	Methyl mercury: assessment of methyl mercury should only occur where there is evidence of its potential source. It may be associated with inorganic mercury and anaerobic microorganism activity in aquatic environments. In addition the reliability and quality of sampling/analysis should be considered
	5	Elemental mercury: HIL does not address elemental mercury. A site-specific assessment should be considered if elemental mercury is present, or suspected to be present,
*		Concentrations in YELLOW exceed the "Residential B" Criteria
*		NA = Not Applicable
*		" - " Not Tested

Thirty (30) samples were analysed for the Priority Heavy Metals and no samples were found to exceed the relevant guidelines.

Table 25: BTEX and TRH Results

			Soil HSLs for Vapour Intrusion (mg/kg)							Management Limits (Urban and Recreational)			
			TOLUENE	ETHYLBENZENE	XYLENES	NAPHTHALENE	BENZENE	F1 ⁹	F2 ¹⁰	F1	F2	F3	F4
Health Screening Levels (HSL)			SOIL PROFILE - CLAY (FINE SOILS)										
HSL A & HSL B - 0m to <1m			480	NL	110	5	0.7	50	280				
HSL A & HSL B - 1m to <2m			NL	NL	310	NL	1	90	NL				
HSL A & HSL B - 2m to <4m			NL	NL	NL	NL	2	150	NL				
HSL A & HSL B - 4m+			NL	NL	NL	NL	3	290	NL				
Soil Saturation Concentration (Csat)			630	68	330	10	430	850	560	800	1000	3500	10000
Limit of Resolution (LOR)			0.5	1	3	0.5	0.2	25	50				
Sample ID	Date Sampled	Depth											
BH1	3/03/2016	0.5	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	250	<100
BH1	3/03/2016	3.1	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH2	3/03/2016	0.4	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH2	3/03/2016	2.3	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH3	3/03/2016	0.8	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	270	<100
BH3	3/03/2016	2.1	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH4	3/03/2016	0.3	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH4	3/03/2016	1.4	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH5	3/03/2016	0.4	<0.1	<0.1	1	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH5	3/03/2016	1.8	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH6	3/03/2016	0.4	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH6	3/03/2016	1.5	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH7	3/03/2016	0.2	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH7	3/03/2016	1.6	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH8	3/03/2016	0.5	<0.1	<0.1	0.5	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH9	3/03/2016	0.3	0.2	<0.1	1.3	<0.5	<0.1	23	<50	23	<50	<100	<100
BH10	4/03/2016	0.8	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH10	4/03/2016	3	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH11	4/03/2016	1.2	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH11	4/03/2016	5	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH12	4/03/2016	0.4	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	300	<100
BH12	4/03/2016	4.2	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH13	4/03/2016	0.5	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH13	4/03/2016	1.2	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH14	4/03/2016	0.5	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	<100	<100
BH14	4/03/2016	1.3	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH15	4/03/2016	0.4	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	250	<100
BH15	4/03/2016	1.5	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100
BH16	4/03/2016	0.6	<0.1	<0.1	<0.3	<0.5	<0.1	<20	<50	<20	<50	190	<100
BH16	4/03/2016	1.4	<0.1	<0.1	<0.3	-	<0.1	<20	<50	<20	<50	<100	<100

Notes

1 Land use settings are equivalent to those described in Table 1A(1) Footnote 1 and Schedule B7. HSLs for vapour intrusion for high density residential assume residential occupation of the ground floor. If communal car parks or commercial properties occupy the ground floor, HSL D should be used.

2 The key limitations of the HSLs should be referred to prior to application and are presented in Friebe and Nadebaum (2011b and 2011d).

3 Detailed assumptions in the derivation of the HSLs and information on how to apply the HSLs are presented in Friebe and Nadebaum (2011a and 2011b).

4 Soil HSLs for vapour inhalation incorporate an adjustment factor of 10 applied to the vapour phase partitioning to reflect the differences observed between theoretical estimates of soil vapour partitioning and field measurements. Refer Friebe & Nadebaum (2011a) for further information.

5 The soil saturation concentration (Csat) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

6 The HSLs for TPH C6-C10 in sandy soil are based on a finite source that depletes in less than seven years, and therefore consideration has been given to use of sub-chronic toxicity values. The >C8-C10 aliphatic toxicity has been adjusted to represent sub-chronic exposure, resulting in higher HSLs than if based on chronic toxicity. For further information refer to Section 8.2 and Appendix J in Friebe and Nadebaum (2011a).

7 The figures in the above table may be multiplied by a factor to account for biodegradation of vapour. A factor of 10 may apply for source depths from 2 m to <4 m or a factor of 100 for source depths of 4 m and deeper. To apply the attenuation factor for vapour degradation, a number of conditions must be satisfied. Firstly the maximum length of the shorter side of the concrete slab and surrounding pavement cannot exceed 15 m, as this would prevent oxygen penetrating to the centre of the slab. Secondly, measurement of oxygen in the subsurface is required to determine the potential for biodegradation. Oxygen must be confirmed to be present at >5% to use these factors.

8 For soil texture classification undertaken in accord with AS 1726, the classifications of sand, silt and clay may be applied as coarse, fine with liquid limit <50% and fine with liquid limit >50% respectively, as the underlying properties to develop the HSLs may reasonably be selected to be similar. Where there is uncertainty, either a conservative approach may be adopted or laboratory analysis should be carried out.

9 To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction

10 To obtain F2 subtract naphthalene from the >C10-C16 fraction

* Concentrations in GREEN exceed the "HSL A & HSL B" Criteria

* NA = Not Applicable

* "-" Not Tested

Thirty (30) samples were analysed for Monocyclic Aromatic Hydrocarbons (BTEX fractions), associated with petrol contamination and Total Recoverable Hydrocarbons (TRH). There were no concentrations of BTEX fractions or TRH recorded above the relevant assessment criteria.

Table 26: PAH, OCP & PCB Results

 Benviron group simple sustainable solutions			PAH (mg/kg)		OCP (mg/kg)										PCB (mg/kg)	
			CARINOGENIC PAHs (as Bap TEQ) ⁶	TOTAL PAHs ⁷	DDT + DDE + DDD	ALDRIN + DIELDRIN	CHLORDANE	ENDOSULFAN	HEPTACHLOR	HCB	METHOXYCHLOR	MIREX	TOXAPHENE	PCBs ⁸		
Health Investigation Levels (HIL)																
Residential B ¹					4	400	600	10	90	400	10	15	500	20	30	1200
Limit of Resolution (LOR)					-	NA	0.05	0.05	0.1	0.05	0.05	0.05	0.2	-	1	0.5
Sample ID	Date Sampled	Depth														
BH1	3/03/2016	0.5	2.2	16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH1	3/03/2016	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH2	3/03/2016	0.4	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH2	3/03/2016	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH3	3/03/2016	0.8	4.5	28	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH3	3/03/2016	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH4	3/03/2016	0.3	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH4	3/03/2016	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH5	3/03/2016	0.4	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH5	3/03/2016	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH6	3/03/2016	0.4	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH6	3/03/2016	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH7	3/03/2016	0.2	1.3	7.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH7	3/03/2016	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH8	3/03/2016	0.5	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH9	3/03/2016	0.3	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH10	4/03/2016	0.8	2	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH10	4/03/2016	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH11	4/03/2016	1.2	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH11	4/03/2016	5	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH12	4/03/2016	0.4	0.6	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH12	4/03/2016	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH13	4/03/2016	0.5	0.8	9.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH13	4/03/2016	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH14	4/03/2016	0.5	0.9	12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH14	4/03/2016	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH15	4/03/2016	0.4	5.3	35	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH15	4/03/2016	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH16	4/03/2016	0.6	3.3	23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	
BH16	4/03/2016	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	

- Notes
- 1 **HIL A** - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare 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 apartments
HIL C - Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space where the potential for exposure is lower and where a site-specific assessment may be more appropriate
HIL D - Commercial/Industrial, includes premises such as shops, offices, factories and industrial sites
 - 6 Carcinogenic PAHs: HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B(a)P) adopted by CCME 2008 (refer Schedule B7). The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, and summing these products (Refer to comment 6 in Table 1A(1) in schedule B1 p49).
 - 7 Total PAHs: HIL is based on the sum of the 16 PAHs most commonly reported for contaminated sites (WHO 1998). The application of the total PAH HIL should consider the presence of carcinogenic PAHs and naphthalene (the most volatile PAH). Carcinogenic PAHs reported in the total PAHs should meet the B(a)P TEQ HIL. Naphthalene reported in the total PAHs should meet the relevant HSL.
 - 8 PCBs: HIL relates to non-dioxin-like PCBs only. Where a PCB source is known, or suspected, to be present at a site, a site-specific assessment of exposure to all PCBs (including dioxin-like PCBs) should be undertaken
 - * Concentrations in **YELLOW** exceed the "Residential B" Criteria
 - * NA = Not Applicable
 - * "-" = Not Tested

Sixteen (16) samples were analysed for PAH. There were no concentrations of PAH, above the relevant assessment criteria with the exception of Benzo(a)pyrene and PAH in BH3 0.8 and BH15 0.4.

Asbestos Investigation

An investigation was undertaken in site soils as per section (asbestos testpitting) in which asbestos was collected in a bulk sample and investigated by Benviron staff. No asbestos was identified in this investigations. Representative samples were collected from the testpit locations in order to analyse for fibrous asbestos containing material which can be seen in below.

Table 27: Asbestos Results

Sample ID	Depth	Asbestos ID in soil
BH1	0.5	Chrysotile Asbestos Detected at Reporting Limit 0.0005%
BH2	0.4	No Asbestos Detected at Reporting Limit 0.1g/kg
BH3	0.8	No Asbestos Detected at Reporting Limit 0.1g/kg
BH4	0.3	No Asbestos Detected at Reporting Limit 0.1g/kg
BH5	0.4	No Asbestos Detected at Reporting Limit 0.1g/kg
BH6	0.4	No Asbestos Detected at Reporting Limit 0.1g/kg
BH7	0.2	No Asbestos Detected at Reporting Limit 0.1g/kg
BH8	0.5	No Asbestos Detected at Reporting Limit 0.1g/kg
BH9	0.3	No Asbestos Detected at Reporting Limit 0.1g/kg
BH10	0.8	No Asbestos Detected at Reporting Limit 0.1g/kg
BH11	1.2	No Asbestos Detected at Reporting Limit 0.1g/kg
BH12	0.4	No Asbestos Detected at Reporting Limit 0.1g/kg
BH13	0.5	No Asbestos Detected at Reporting Limit 0.1g/kg
BH14	0.5	No Asbestos Detected at Reporting Limit 0.1g/kg
BH15	0.4	No Asbestos Detected at Reporting Limit 0.1g/kg
BH16	0.6	No Asbestos Detected at Reporting Limit 0.1g/kg

Sixteen (16) discrete samples were analysed for the presence of asbestos fibres in the soil. There was asbestos detected sample BH1 however these were below the relevant guideline criteria.

14.2 Groundwater

The original laboratory test results certificates are presented in **Appendix C – NATA Laboratory Test Results**. A summary of the test results together with the assessment criteria adopted are discussed below.

Table 28: Heavy Metals Results (Groundwater)

			HEAVY METALS (µg/L)							
			ARSENIC (As) - Total	CADMIUM (Cd)	CHROMIUM (Cr) - Total	COPPER (Cu)	LEAD (Pb)	MERCURY (Hg) - Total	NICKEL (Ni)	ZINC (Zn)
ANZ ^a Guidelines for Fresh and Marine Water Quality (2000)										
Aquatic Ecosystems (Trigger Values)										
Fresh Water			24 ^b 13 ^c	0.2	3.3 ^{d, h} 1 ^e	1.4	3.4	0.6 ^f 0.4 ^{g, h}	11	8
Marine Water			2.3 ^{b, h} 4.5 ^{c, h}	5.5	27.4 ^d 4.4 ^e	1.3	4.4	ID ID	70	15
Water for recreational purposes										
Trigger Values			50	5	50	1000	50	1	100	5000
Lim it of Resolution			1	0.1	1	1	1	0.05	1	1
Sample ID	Date Sampled	Depth								
GW1	7/03/2016	-	9	<0.5	23	50	61	0.2	<5	120
GW2	7/03/2016	-	<5	<0.5	<5	<5	<5	<0.1	<5	46
GW3	7/03/2016	-	<5	<0.5	<5	21	<5	<0.1	7	55
GW4	7/03/2016	-	<5	<0.5	<5	19	6	<0.1	<5	68
GW5	7/03/2016	-	92	4.4	98	730	130	0.6	380	3700
GW6	7/03/2016	-	230	18	920	2200	1100	3.7	1300	6100
GW7	7/03/2016	-	18	<0.1	7	32	26	0.1	24	160

Notes

- a: ANZ = Australia and New Zealand
b: as As (III)
c: as As (V)
d: as Cr (III)
e: as Cr (VI)
f: as Hg (Inorganic)
g: as Hg (methyl)
h: Interim working values in the absence of reliable trigger values (Section 8.3.7)
ID: Insufficient Data to derive a reliable trigger value

Results highlighted green indicate exceedance above fresh water trigger values.

Seven (7) samples were analysed for the Priority Heavy Metals and several samples were noted to contain heavy metals above the relevant guideline criteria.

Table 29: BTEX and TRH Results (Groundwater)

			Groundwater HSLs for Vapour Intrusion (ug/L)						
			TOLUENE	ETHYLBENZENE	XYLENES	NAPHTHALENE	BENZENE	F1 ⁹	F2 ¹⁰
Health Screening Levels (HSL)			SOIL PROFILE - CLAY						
HSL A & HSL B - 2m to <4m			NL	NL	NL	NL	5	NL	NL
HSL A & HSL B - 4m to <8m			NL	NL	NL	NL	5	NL	NL
Solubility Limit			61	3.9	21	0.17	59	9	3
Limit of Resolution (LOR)			1	1	3	1	1	25	50
Sample ID	Date Sampled	Depth							
GW1	7/03/2016	-	<1	<1	<3	<1	<1	<20	<50
GW2	7/03/2016	-	<1	<1	<3	<1	<1	<20	<50
GW3	7/03/2016	-	<1	<1	<3	<1	<1	<20	<50
GW4	7/03/2016	-	<1	<1	<3	<1	<1	30	<50
GW5	7/03/2016	-	<1	<1	<3	<1	<1	<20	<50
GW6	7/03/2016	-	<1	<1	<3	<1	<1	<20	<50
GW7	7/03/2016	-	<1	<1	<3	<1	<1	<20	<50

Notes

- Land use settings are equivalent to those described in Table 1A(1) Footnote 1 and Schedule B7. HSLs for vapour intrusion for high density residential assume residential occupation of the ground floor. If communal car parks or commercial properties occupy the ground floor, HSL D should be used,
- The key limitations of the HSLs should be referred to prior to application and are presented in Friebe and Nadebaum (2011b)
- Detailed assumptions in the derivation of the HSLs and information on how to apply the HSLs are presented in Friebe and Nadebaum (2011a and 2011b).
- Soil HSLs for vapour inhalation incorporate an adjustment factor of 10 applied to the vapour phase partitioning to reflect the differences observed between theoretical estimates of soil vapour partitioning and field measurements. Refer Friebe & Nadebaum (2011a) for further information.
- The soil saturation concentration (C_{sat}) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds C_{sat}, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these
- The HSLs for TPH C6-C10 in sandy soil are based on a finite source that depletes in less than seven years, and therefore consideration has been given to use of sub-chronic toxicity values. The >C8-C10 aliphatic toxicity has been adjusted to represent sub-chronic exposure, resulting in higher HSLs than if based on chronic toxicity. For further information refer to Section 8.2 and Appendix J in Friebe and Nadebaum (2011a).
- The figures in the above table may be multiplied by a factor to account for biodegradation of vapour. A factor of 10 may apply for source depths from 2 m to <4 m or a factor of 100 for source depths of 4 m and deeper. To apply the attenuation factor for vapour degradation, a number of conditions must be satisfied. Firstly the maximum length of the shorter side of the concrete slab and surrounding pavement cannot exceed 15 m, as this would prevent oxygen penetrating to the centre of the slab. Secondly, measurement of oxygen in the subsurface is required to determine the potential for biodegradation. Oxygen must
- For soil texture classification undertaken in accord with AS 1726, the classifications of sand, silt and clay may be applied as coarse, fine with liquid limit <50% and fine with liquid limit >50% respectively, as the underlying properties to develop the HSLs may reasonably be selected to be similar. Where there is uncertainty, either a conservative approach may be adopted or laboratory analysis should be carried out
- To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction
- To obtain F2 subtract naphthalene from the >C10-C16 fraction

* Concentrations in GREEN exceed the "HSL A & HSL B" Criteria

* NA = Not Applicable

* " - " Not Tested

Seven (7) samples were analysed for Monocyclic Aromatic Hydrocarbons (BTEX fractions), associated with petrol contamination and Total Recoverable Hydrocarbons (TRH). There were no concentrations of BTEX fractions or TRH recorded above the relevant assessment criteria, however significant detections were observed in the underlying groundwater.

Table 30: PAH Results (Groundwater)

			PAH (ug/L)		OCP (ug/L)				PCB (ug/L)	
			NAPHTHALENE	BENZO(a)PYRENE	ENDRIN	ENDOSULFAN	HEPTACHLOR	DDT	AROCHOR 1242	AROCHLOR 1254
Health Investigation Levels (HIL)										
Fresh Water			16	-	0.01	0.03	0.01	0.06	0.3	0.01
Marine Water			50	-	0.004	0.005	-	-	-	-
Limit of Resolution (LOR)			1	1	0.2	0.2	0.2	0.2	2	2
Sample ID	Date Sampled	Depth								
GW1	7/03/2016	-	<1	<1	-	-	-	-	-	-
GW2	7/03/2016	-	<1	<1	-	-	-	-	-	-
GW3	7/03/2016	-	<1	<1	-	-	-	-	-	-
GW4	7/03/2016	-	<1	<1	-	-	-	-	-	-
GW5	7/03/2016	-	<1	<1	-	-	-	-	-	-
GW6	7/03/2016	-	<1	<1	-	-	-	-	-	-
GW7	7/03/2016	-	<1	<1	-	-	-	-	-	-

- Notes 1 PCBs: HIL relates to non-dioxin-like PCBs only. Where a PCB source is known, or suspected, to be present at a site, a site-specific assessment of exposure to all PCBs (including dioxin-like PCBs) should be undertaken
- * Concentrations in **BLUE** exceed the "Fresh Water" Criteria
 - * Concentrations in **GREEN** exceed the "Marine Water" Criteria
 - * NA = Not Applicable
 - * " - " Not Tested

Seven (7) samples were analysed for PAH. There were no concentrations of PAH recorded above the relevant assessment criteria.

Refer to **Appendix C** – NATA Accredited Laboratory Results

15.0 DISCUSSION

A number of potential areas of environmental concerns were identified at the site, particularly:

- Historical uses;
- Carpark areas / driveways where leaks and spills from cars may have occurred;
- Vicinity of degrading building features
- Former UST area

Laboratory Results for the soil samples were below detection limits or the relevant guideline criteria with the exception of Benzo(a)pyrene in samples BH3 0.8 and BH15 0.4. The 95% UCL of the mean concentration was calculated using ProUCL on the dataset of all fill samples and the results were below the relevant guideline criteria (HIL B).

A detection of asbestos was noted within sample BH1 however it was below the relevant guideline criteria. It was also noted that samples collected in the former UST areas did not indicate the presence of any gross contamination.

Laboratory Results for the groundwater samples were below detection limits and the relevant guideline criteria with the exception of Heavy Metals in various samples. Groundwater samples from all groundwater wells were analysed for TRH, BTEX, VOC and heavy metals. Elevated concentrations (in excess of the adopted GILs) of heavy metals, particularly zinc, nickel, cadmium and copper were detected, however, concentrations in the up gradient monitoring wells was similar to that observed in the mid and down gradient monitoring wells and therefore the elevated heavy metal

concentrations are considered to be reflective of the regional groundwater quality and not related to on-site contamination issues.

Off-site impacts of contaminants in soil are generally governed by the transport media available and likely receptor(s). The most common transport medium is water, whilst receptors include uncontaminated soils, groundwater, surface water bodies, humans, flora & fauna.

Surface water run-off from within the site would generally be deposited in the stormwater drainage pits and the potential for migration of contamination is low and any infiltration of contaminants is also expected to be low-moderate based on the underlying geology. The potential for significant impact of site soils, if contaminated, on the water bodies collecting surface water run-off from the region is considered low.

16.0 CONCLUSION AND RECOMENDATION

Based on the results of this investigation it is considered that the risks to human health and the environment associated with soil contamination at the site are low in the context of the proposed use of the site. The site therefore ***is suitable*** for the proposed development, subject to the following recommendations:

- Any soils proposed for removal from the site should initially be classified in accordance with the *“Waste Classification Guidelines, Part 1: Classifying Waste”* NSW DECC (2014).

If during any potential site works, significant odours and / or evidence of gross contamination (including asbestos) not previously detected are encountered, or any other significant unexpected occurrence, site works should cease in that area, at least

temporarily, and the environmental consultant should be notified immediately to set up a response to this unexpected occurrence.

Thank you for the opportunity of undertaking this work. We would be pleased to provide further information on any aspects of this report.

17.0 LIMITATIONS

To the best of our knowledge information contained in this report is accurate at the date of issue, however, subsurface conditions, including groundwater levels and contaminant concentrations, can change in a limited time. This should be borne in mind if the report is used after a protracted delay.

There is always some disparity in subsurface conditions across a site that cannot be fully defined by investigation. Hence it is unlikely that measurements and values obtained from sampling and testing during environmental works carried out at a site will characterise the extremes of conditions that exist within the site.

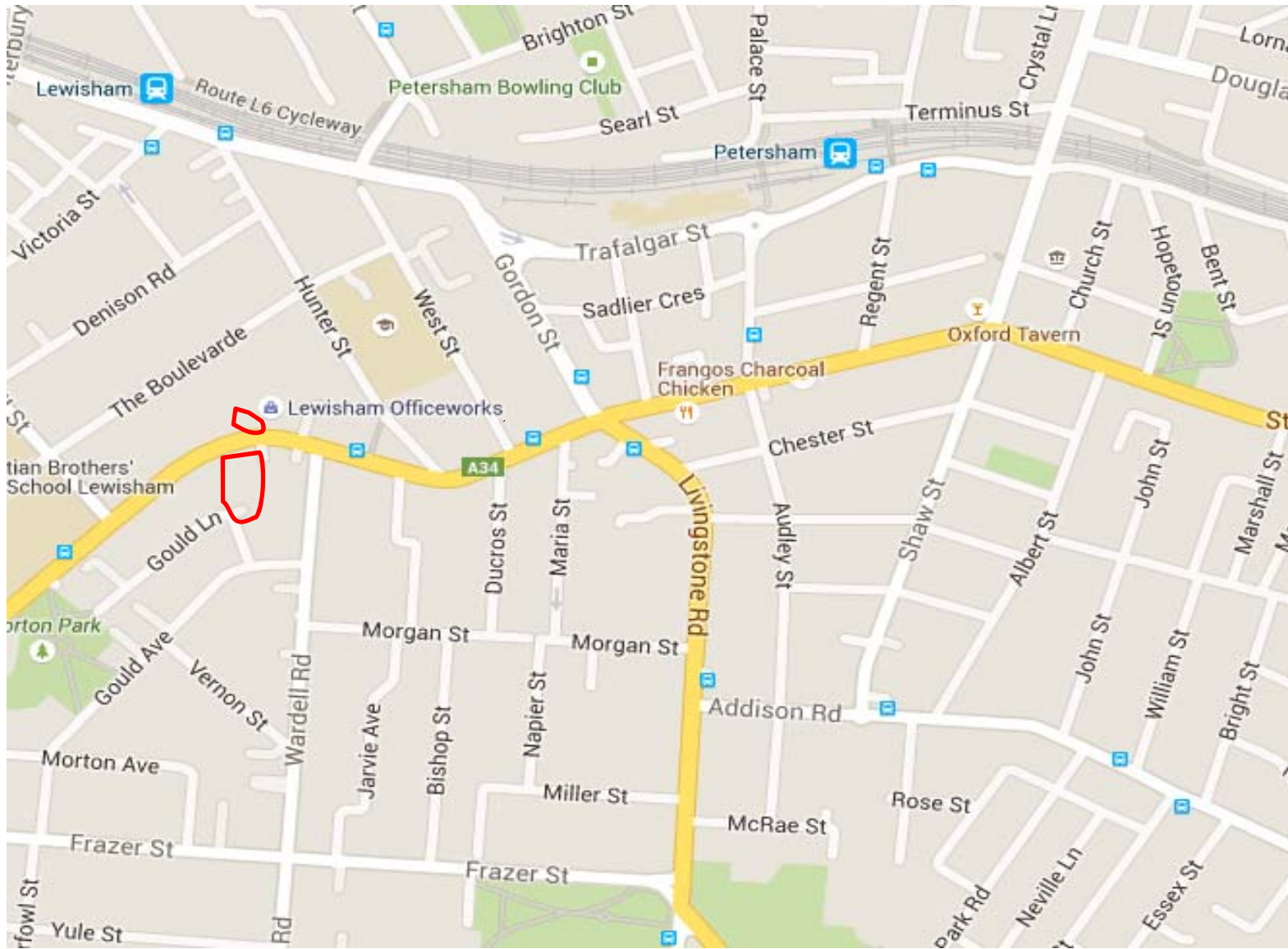
There is no investigation that is thorough enough to preclude the presence of material that presently or in the future, may be considered hazardous at the site. Since regulatory criteria are constantly changing, concentrations of contaminants presently considered low may, in the future, fall under different regulatory standards that require remediation.

Opinions expressed herein are judgements and are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

REFERENCES

- Australian and New Zealand Environment and Conservation Council (ANZECC) (1996)
– *Drinking Water Guidelines*.
- Australian and New Zealand Environment and Conservation Council (ANZECC) (2000)
– *Guidelines for Fresh and Marine Waters*.
- Department of Urban Affairs and Planning – EPA (1998) “*Managing Land Contamination – Planning Guidelines – SEPP 55 – Remediation of Land*”.
- National Environmental Protection Council (NEPC) (1999) – *National Environmental Protection (Assessment of Site Contamination) Measure. Amendment 2013*
- NSW EPA (2014) “*Technical Note: Investigation of Service Station Sites*”.
- NSW EPA (1995) “*Sampling Design Guidelines*”.
- NSW EPA (1997) “*Guidelines for Consultants Reporting on Contaminated Sites*”.
- NSW DEC (2006) “*Guidelines for the NSW Site Auditor Scheme*”.
- NSW EPA (2009) “*Guidelines on Significant Risk of Harm from contaminated land and the duty to report*”.
- NSW DECC “*Waste Classification Guidelines, Part 1: Classifying Waste*” (2014).
Department of Environment and Climate Change NSW, Sydney

FIGURE 1 SITE LOCATION



Key

Site Location



DRAWN
BB

FIGURE
1

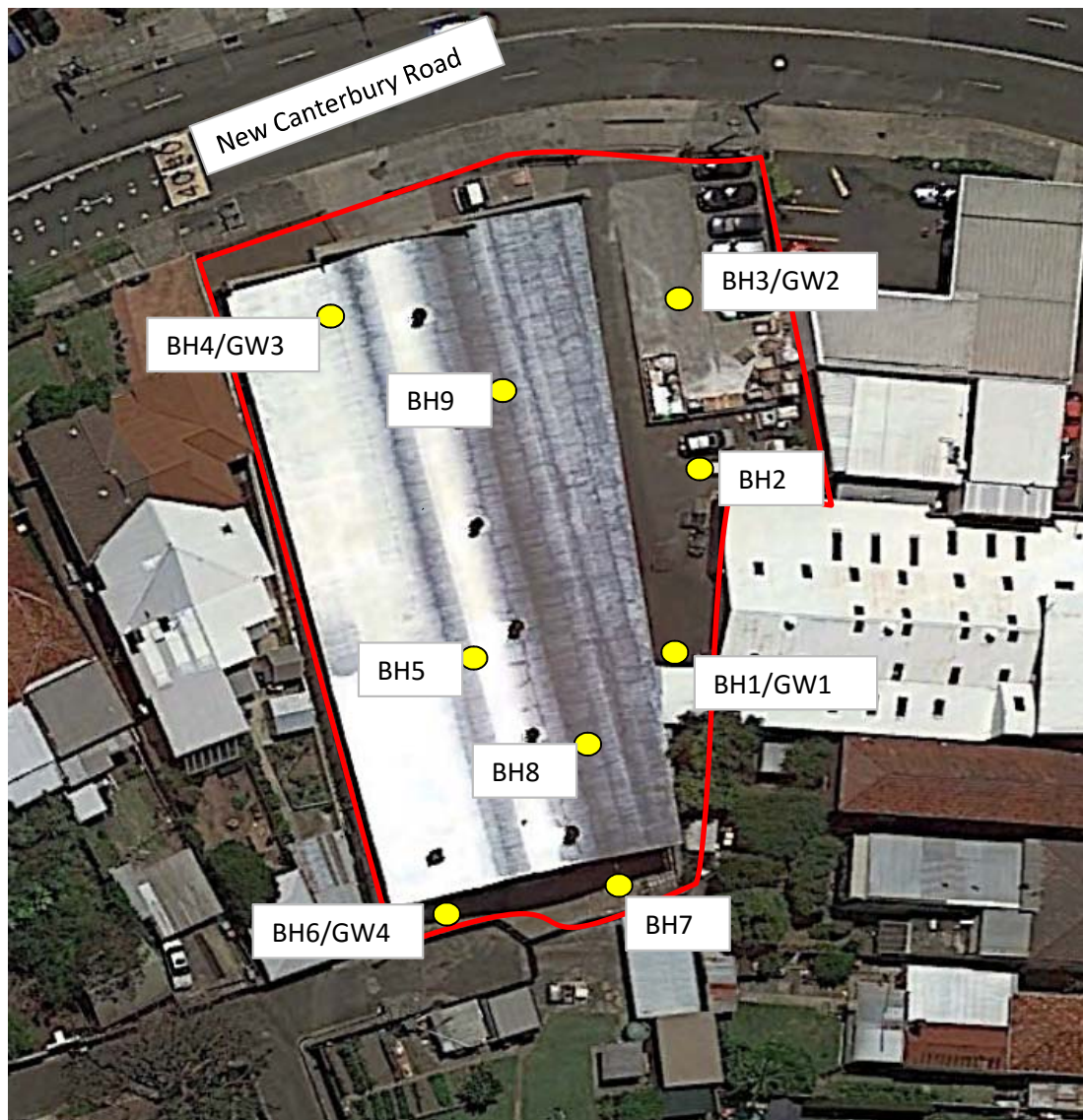
Job #
E795

SITE LOCATION

Illuminate Living Pty Ltd

183 & 218 New Canterbury Road, Lewisham NSW

FIGURE 2: SITE PLAN AND SAMPLING LOCATIONS



Key

Site Boundary
Sample Location



DRAWN
BB

FIGURE
1

Job #
E795

SITE PLAN

Illuminate Living Pty Ltd

218 New Canterbury Road, Lewisham NSW



Key

Site Boundary
Sample Location



DRAWN
BB

FIGURE
1

Job #
E795

SITE PLAN

Illuminate Living

183 New Canterbury Road, Lewisham NSW

APPENDIX A: LAND TITLE INFORMATION

CERTIFICATE OF TITLE.

(C.)

New South Wales.

[Reference to last Certificate]

[Vol. CC Folio 144]



REGISTER BOOK

VOL 236 FOLIO 153

CANCELLED W

James Matthews of the City of Sydney, Bachelor, Transferee under Instrument of Transfer from George Sutherland, Deed numbered 16196 is now the proprietor of an Estate in the Simple, Subject nevertheless to the reservations and conditions, if any, contained in the Grant hereinafter referred to, and also subject to such encumbrances liens and interests as are notified herein in that piece of Land situated at Petersham in the Parish of Petersham and County of Cumberland containing One rood and three perches or thereabouts as shown on the plan hereon and therein edged red being Lot 8 of Section 1 on a plan deposited in the Land Titles Office Sydney Number 144 and part of Sixty acres delineated in the public map of the said Parish deposited in the office of the Surveyor General originally granted to John M. H. M. by from Grant dated the third day of October one thousand seven hundred and ninety four.

In witness whereof, I have hereunto signed my name and affixed my Seal, this Eighteenth day of October one thousand eight hundred and seventy-five.

Signed the 18th day of October 1875,
in the presence of

J. W. Chyard

A. M. M. M.
Registrar General.

NOTIFICATION REFERRED TO.



N^o 66809 MORTGAGE DATED 14th March 1873
FROM THE above NAMED James Matthews
TO the Australian Mutual Provident
Society
PRODUCED & ENTERED 15th March 1873
AT 2nd MORTGAGE 3 O'CLOCK IN THE AFTER NOON
By *James Matthews* DEP. REGISTRAR

DISCHARGE OF THE above MORTGAGE N^o 66809
DATED 5th April 1878 PRODUCED & ENTERED
AT 9th April 1878 AT 8th MORTGAGE
O'CLOCK IN THE AFTER NOON
By *James Matthews* DEP. REGISTRAR

N^o 9520 MORTGAGE DATED 30th April 1872
FROM THE above NAMED James Matthews
TO the Australian Mutual Provident
Society
PRODUCED & ENTERED 13th May 1872
AT 2nd MORTGAGE 3 O'CLOCK IN THE AFTER NOON
By *James Matthews* DEP. REGISTRAR

EST93200



DISCHARGE OF within MORTGAGE No. 195208
DATED 18 November 1902 PRODUCED & ENTERED
25 November 1902 AT 19 mts to 3
O'CLOCK IN THE after NOON.

[Signature]
Deputy Registrar General.

No. 353242 MORTGAGE DATED 18 November 1902
FROM THE SAID James Matthews To Alfred
Allen Black of Lithgow Principal
of the Superior Public School Lithgow
PRODUCED & ENTERED 25 November
1902 AT 19 mts to 3 O'CLOCK IN THE after NOON

[Signature]
DEPUTY REGISTRAR GENERAL.

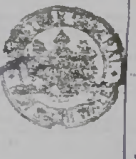
DISCHARGE OF within MORTGAGE NO. 353242
DATED 15th August 1906 PRODUCED & ENTERED
20th August 1906 AT 29 mts to 11
O'CLOCK IN THE after NOON.

[Signature]
Deputy Registrar General.

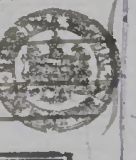
No. 439516 MORTGAGE DATED 15th August 1906
FROM THE SAID James Matthews Esq.
Sydney Herbert Cary and
John Wetherill both of Sydney,
Gentlemen.
PRODUCED & ENTERED 20th August
1906 AT 29 mts to 11 O'CLOCK IN THE after NOON

[Signature]
DEPUTY REGISTRAR GENERAL.

NO. 513,482 TRANSFER OF MORTGAGE No. 439516
dated 1st December 1908 from the said SYDNEY HERBERT
CARY and JOHN WETHERILL to the AUSTRALIAN
MUTUAL FIRE INSURANCE SOCIETY LIMITED.
Produced and entered 16th December 1908 at 10 o'clock in
the forenoon.


[Signature]
Deputy Registrar General.

NO. 513,482 TRANSFER OF MORTGAGE No. 439516
dated 1st December 1908 from the said SYDNEY HERBERT
CARY and JOHN WETHERILL to the AUSTRALIAN
MUTUAL FIRE INSURANCE SOCIETY LIMITED.
Produced and entered 16th December 1908 at 10 o'clock in
the forenoon.


[Signature]
Deputy Registrar General.

No. 1952928 APPLICATION BY TRANSMISSION
Albert Ernest Matthews of Hurstons Park
Boot Manufacturer
is now the registered
Proprietors of the Land within described in pursuance of the above
Application. Produced 5th January 1927 and
entered 15th January 1927
at 11 o'clock in the fore noon.

[Signature]
REGISTRAR GENERAL.

No. B452929 CAVEAT dated 5th January 1927
by the Registrar General. Produced and entered
15th January 1927.
at 11 o'clock in the fore noon.
[Signature]
REGISTRAR GENERAL.


No. B485742 DISCHARGE of within Mortgage
No. 439516 dated 23rd August 1926
Produced 25th March 1927 and entered
25th March 1927
at 42 mts to 11 o'clock in the fore noon.
[Signature]
REGISTRAR GENERAL.


The within Caveat No. B452929
is hereby withdrawn.
Dated 7th May 1927
[Signature]
REGISTRAR GENERAL.


No. B485743 TRANSFER dated 7th February 1927
from the said Albert Ernest Matthews to
Kenneth Ronald Peet of Sydney,
Artificial Flower Manufacturer
of the land within described
Produced 25th March 1927 and entered 7th May 1927
at 10 o'clock in the fore noon.
[Signature]
REGISTRAR GENERAL.


No. F32149 TRANSFER dated 7th May 1927
from the said Kenneth Ronald Peet to Mary White
Wife of Robert Edward Peet of Lithgow
Company Director
of the land within described
Produced and entered 20th June 1927
at 34 mts to 11 o'clock in the fore noon.
[Signature]
REGISTRAR GENERAL.


No. F32150 TRANSFER dated 13th May 1927
from the said Mary White to Kent Shoes Pty
Limited
of the land within described
Produced and entered 20th June 1927
at 34 mts to 11 o'clock in the fore noon.
[Signature]
REGISTRAR GENERAL.


No. F32151 MORTGAGE dated 10th May 1927
from the said Kent Shoes Pty Limited
to BANK OF NEW SOUTH WALES
Produced and entered 20th June 1927
at 34 mts to 11 o'clock in the fore noon.
[Signature]
REGISTRAR GENERAL.


This Deed is Cancelled and Certificate of Title issued
Vol. 6660 Fol 179
[Signature]
REGISTRAR GENERAL.

OF 539148

134857
F5029040M
905 to 11
F5391980

M

NEW SOUTH WALES

(For Grant and title reference
prior to first edition see
Deposited Plan.)

CERTIFICATE OF TITLE
PROPERTY ACT, 1900, as amended.



Vol. 9641 Fol. 115

1st Edition issued 26-2-1964.

CANCELLED

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

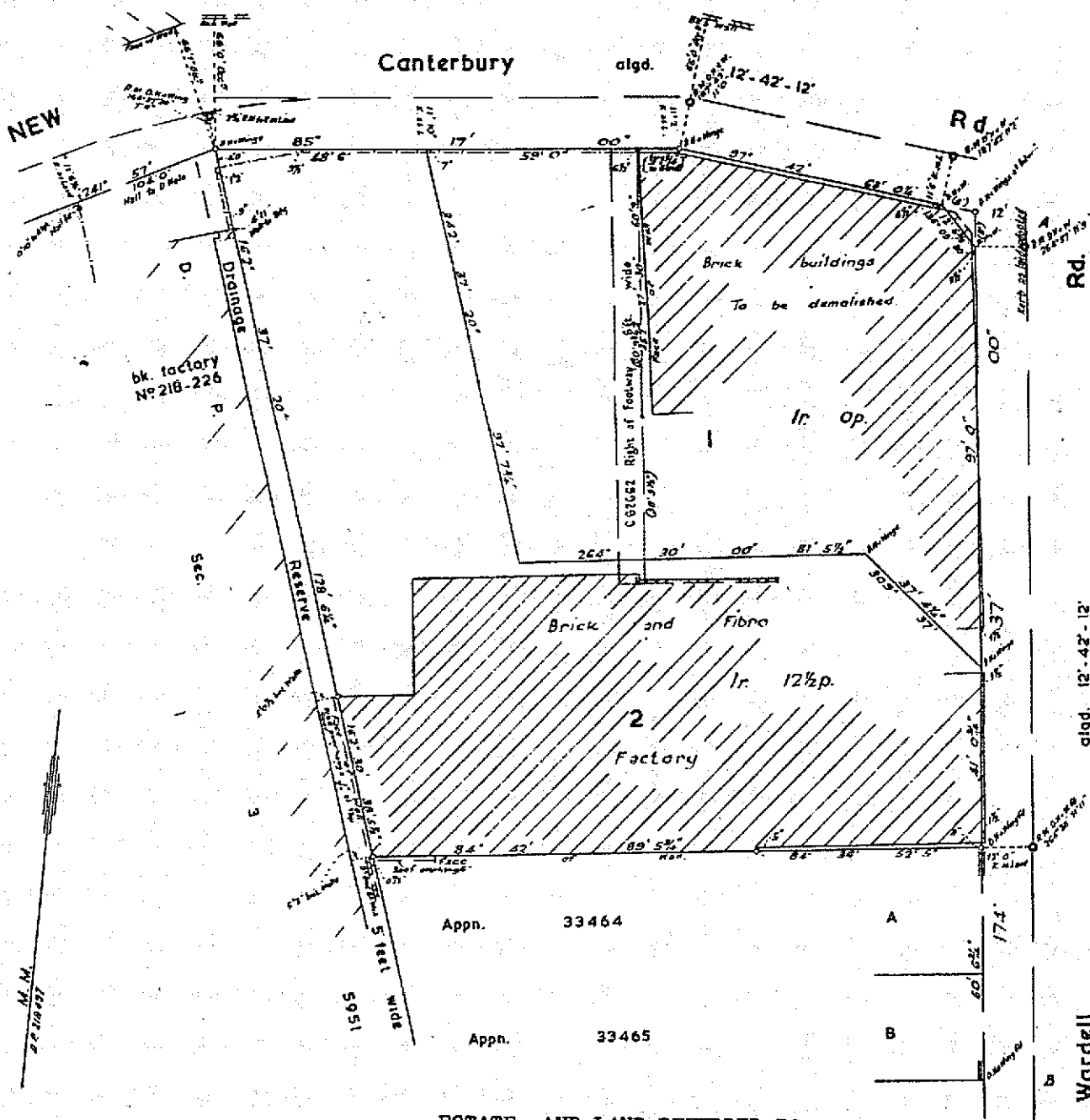
Witness

B. Bailey

Janatson
Registrar-General.



PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 2 in Deposited Plan 218497 at Petersham in the Municipality of Marrickville Parish of Petersham and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

~~DON ELECTRICAL CO. PTY. LIMITED.~~

*DEC. REG. GEN
7.6.64*

Janatson
Registrar General.

SECOND SCHEDULE (Continued overleaf)

- Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
- Subject to the Agreement dated 6-9-1909 (Document 9 in Primary Application No. 21458) so far as same affects the part of the land above described formerly comprised in Certificate of Title Volume 3042 Folio 140.
- Mortgage No. F995430 of the parts of the land above described formerly comprised in Certificates of Title Volume 1960 Folio 224, Volume 3042 Folio 140 and Volume 3655 Folio 150 to Bank of New South Wales. Entered 30-12-1953. Discharged. T669549
- Mortgage No. J527660 of the part of the land above described formerly comprised in Certificate of Title Volume 6658 Folio 104 to John William Hunt of Dulwich Hill Plumber. Entered 10-1-1964. Discharged. T669551

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

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

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

CERTIFICATE OF TITLE.

95211

(C.)

New South Wales.

CANCELLED  W

REGISTER BOOK,

[Appⁿ No. 16294 _____]

[Reference to last Certificate _____]

[Vol. 2142 _____ Folio 127 _____]



VOL. 2170 FOLIO 39

William Law of *Peterham Baker* Transfers under Instrument of Transfer
from *Goodlet & Smith Limited* N^o 615934

_____ is now the proprietor of an Estate in Fee Simple,
subject nevertheless to the reservations and conditions, if any, contained in the Grants hereinafter referred to, and also subject to such
encumbrances, liens, and interests as are notified hereon, in *That* piece of land situated
in the *Municipality of Marrickville*, Parish of *Peterham*, and Connty of *Cumberland*
containing *One rood thirty and three quarters perches*, or thereabouts
as shown on the Plan hereon, and therein edged red, being *Lots 1 and 2 on a Plan deposited in the Land Titles*
Office Sydney N^o 5951 and part of sixty acres originally granted to Neil M. Kellar by Crown
Grant dated the third day of October One thousand seven hundred and ninety four and
also part of One hundred acres originally granted to William Beckwith by Crown Grant dated
the third day of October One thousand seven hundred and ninety four
Which said Grants are delineated in the Public Map of the said Parish deposited in the
Department of Lands

In witness whereof, I have hereunto signed my name and affixed my Seal, this *third* day of

Signed the *3rd* day of *August* 191*1*

in the presence of

M. Riley

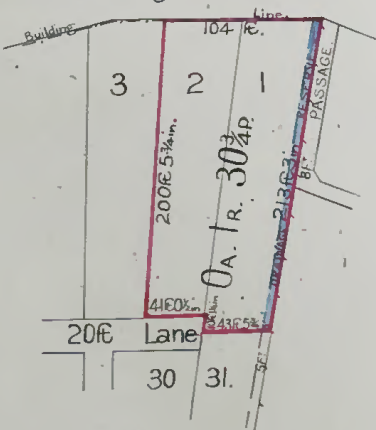
J. J. J. J.

Deputy Registrar General



NOTIFICATION REFERRED TO.

Canterbury New Rd



Right of Drainage over the piece of land 5 feet wide colored
blue on Plan hereon as reserved by above mentioned Instrument
of Transfer N^o 615934

J. J. J. J.
Deputy Registrar General

No. 4713451	APPLICATION BY TRANSMISSION
By <i>from Goodlet & Smith Limited</i> to <i>William Law</i> of <i>Peterham Baker</i> and <i>Robert William Law</i> of <i>Marrickville</i> the registered Proprietors of the Land within described in pursuance of the above Application. Produced <i>11 July</i> 19 <i>21</i> and entered <i>27 July</i> 19 <i>21</i> at <i>3 o'clock</i> in the <i>after</i> noon.	
<i>W. J. J. J.</i> REGISTRAR GENERAL	



No A 713452 CAVEAT dated 11 July 1922
by the Registrar General. Produced and entered
at 11 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

The within Caveat No. A713452
is hereby withdrawn.
Dated 19th July 1922
S. H. Wells
REGISTRAR GENERAL

No. A804304 TRANSFER dated 16th March 1922
from the said Eliza Ann Law, Rex Roy Law and
Rupert William Law to Laws Limited
Produced and entered 19th July 1922
at 11 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

No. B105530 MORTGAGE dated 26th June 1924
from the said Laws Limited to The Commercial
Banking Company of Sydney Limited
Produced and entered 18th July 1924
at 10 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

No. 978799 DISCHARGE of within mortgage
No B105530 dated 27th November 1953
Produced 30th November 1953 and entered 30th November 1953
at 4 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

No. F995448 TRANSFER dated 24th November 1953
from the said Laws Proprietary Limited to Don Electrical Co. Pty
Limited
Produced and entered 23rd December 1953
at 10 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

No. F995430 MORTGAGE dated 24th December 1953
from the said Don Electrical Co. Pty Limited
to BANK OF NEW SOUTH WALES
Produced and entered 30th December 1953
at 10 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

No. G215111 DISCHARGE of within mortgage
F995430 dated 23rd November 1954
as regards the land comprised in this Certificate of Title
Produced 21st December 1954 and entered 21st December 1954
at 10 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

No. G215112 TRANSFER dated 30th November 1954
from the said Don Electrical Co. Pty Limited to
S. B. Chapman and Company Pty Limited
Produced and entered 21st December 1954
at 10 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

No. G444439 MORTGAGE dated 21st January 1956
from the said S. B. Chapman and Company
Pty Limited to The Bank of Adelaide
Produced and entered 2nd February 1956
at 9 o'clock in the fore noon.
S. H. Wells
REGISTRAR GENERAL

MORTGAGE No. G444439 has been discharged.
See No. 294843 Entered 21st June 1973
J. Watson
REGISTRAR GENERAL

Mauri Brothers & Thomson (Aust) Pty Limited
Now the registered proprietor of the land within described
See TRANSFER No. P616922 dated 13th November 1975
Entered 5th May 1976
J. Watson
REGISTRAR GENERAL

REGISTERED PROPRIETOR Beaumont Agencies Pty
Limited by Transfer S816587 Registered
2-12-1991
B. Smith
REGISTRAR GENERAL

S816588 Mortgage to Australia and New
Zealand Banking Group Limited Registered
2-12-1991
B. Smith
REGISTRAR GENERAL

S900245 Caveat by Mauri Brothers & Thomson
Pty Limited Registered 16-2-1982
Produced 23rd December 1982
at 10 o'clock in the fore noon.
B. Smith
REGISTRAR GENERAL

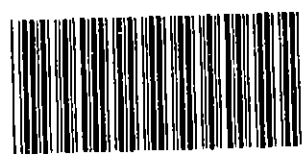
This deed is cancelled as to whole
New certificates of Title have issued on 21-7-1982
for lots in Deposited Plan No. G25663
Lots 324 Vol. 14811 fo. 147618 respectively.
B. Smith
REGISTRAR GENERAL

2802307
C.T. 9-12

P616922 T. R
S816587 T
S900245 P. R
S953223 W. R
C.T. 7-5-85
276256
Regd 27-7-82



CERTIFICATE OF TITLE
REAL PROPERTY ACT, 1900



14811147

NEW SOUTH WALES

Appln.Nos.15571, 16294
and 21458

Prior Titles Vol.2170 Fol. 39
Vol.9641 Fol.115

Vol. **14811** Fol. **147**

EDITION 1000

21 7 1982



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

CANCELLED



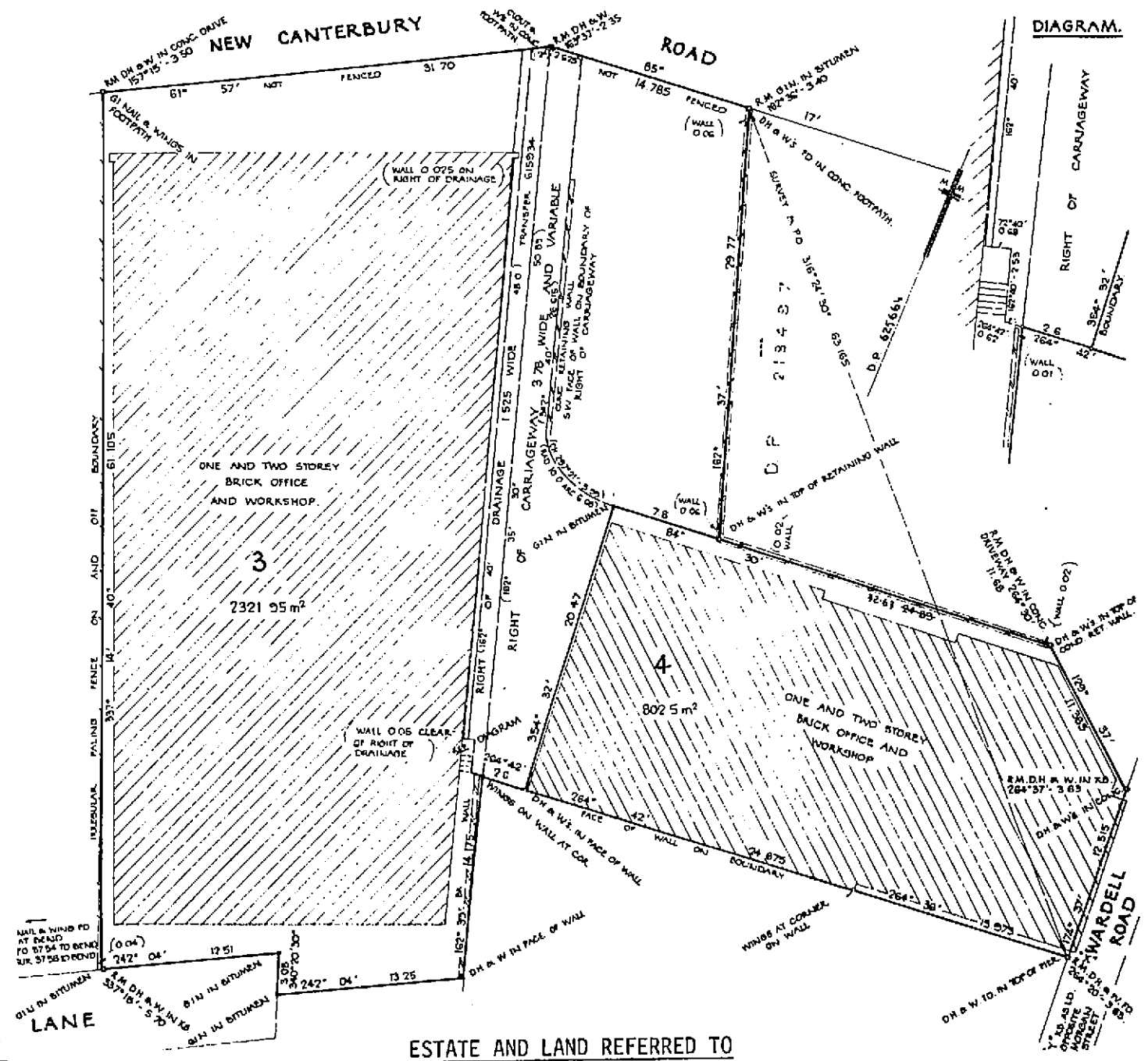
Registrar General.

SEE AUTO FOLIO



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 3 in Deposited Plan 625664 at Petersham in the Municipality of Marrickville Parish of Petersham and County of Cumberland being part of Portion 60A granted to Neil McKellar on 3-10-1794 and part of Portion 100A granted to William Beckwith on 3-10-1794.

FIRST SCHEDULE

BEAUMONT AGENCIES PTY. LIMITED.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
- EA 2. 615934P Right of drainage affecting the part of the land above described shown so burdened in Deposited Plan 625664.
- my 3. S816588P Mortgage to Australia and New Zealand Banking Group Limited.
- RL 4. DP625664P Right of carriageway affecting the part of the land above described shown so burdened in Deposited Plan 625664.

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

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

Page 5516588
23-7-82

NOTATIONS AND UNREGISTERED DEALINGS

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SECOND SCHEDULE (continued)
PARTICULARS
Registrar General CANCELLATION

--	--

CANCELLED
SEE AUTO FOLIO

FIRST SCHEDULE (continued)
REGISTERED PROPRIETOR
Registrar General

202.

Appn. No. 3641
Reference to Last Certificate
Vol. 236 Fol. 153

New South Wales.



[CERTIFICATE OF TITLE.]

ORDER NO. F539198

REGISTER BOOK.
Vol. 6440 Fol. 179

CANCELLED ☒

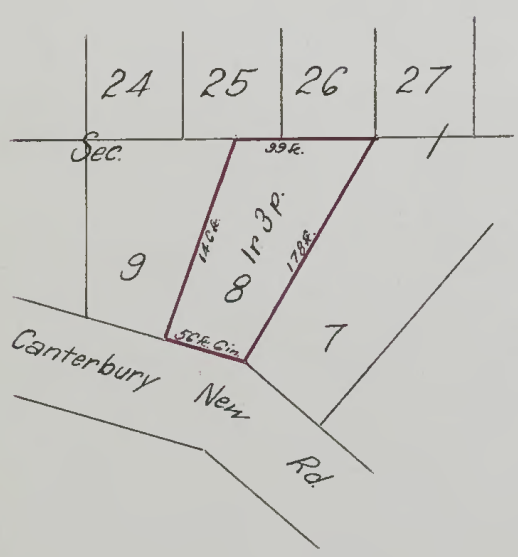
KENT SHOES PTY LIMITED(IN LIQUIDATION) by virtue of Certificate of Title Volume 236 Folio 153 now surrendered is now the proprietor of an Estate in Fee Simple subject nevertheless to the reservations and conditions, if any, contained in the Grant hereinafter referred to, and also subject to such encumbrances, liens, and interests as are notified hereon, in That piece of land situated at Lewisham in the Municipality of Marrickville Parish of Petersham, and County of Cumberland containing One rood three perches or thereabouts as shown in the plan hereon and therein edged red being Lot 8 of Section 1 in Deposited plan No. 144 and being part of 60 acres originally granted to Neil McKellar by Crown Grant dated the 3rd day of October 1794.

In witness whereof I have hereunto signed my name and affixed my Seal, this Thirty-first day of January, 1952

Signed in the presence of *G. McKern*

J. H. Pells

Registrar-General



No. F504904 TRANSFER dated 20th Jan 1952
from the said Kent Shoes Pty Limited (in liquidation) to
Ernest Alfred Lee of Petersham, Queensland and his wife
his wife, Ernest Alfred Lee, of Petersham, Queensland
Produced 2nd August 1951 and entered 15th February 1952
at 12 o'clock in the noon.

J. H. Pells
REGISTRAR GENERAL

No. G 27041 MORTGAGE dated 10th February 1952
from the said Ernest Alfred Lee, of Petersham, Queensland
Lee, Ernest Alfred Lee and James Herbert Lee to
Australia and New Zealand Bank Limited
Produced 2nd March 1952 and entered 2nd March 1952
at 2 o'clock in the noon.

J. H. Pells
REGISTRAR GENERAL

MORTGAGE No. G 27041 has been discharged.
See J 362882 Entered 24th June 1963

J. H. Pells
REGISTRAR GENERAL

Scale 100 feet to one inch.
NOTIFICATION REFERRED TO
No. F32151 Mortgage dated the 13th day of May 1949 from
Kent Shoes Pty. Limited to Bank of New South Wales.
Produced and entered the 24th day of June 1949 at 34
minutes past 11 o'clock in the forenoon.

J. H. Pells
Registrar General.

No. F504903 DISCHARGE of within mortgage
No. F32151 dated 17th July 1951
Produced 2nd August 1951 and entered 15th February 1952
at 12 o'clock in the noon.

J. H. Pells
REGISTRAR GENERAL

F539198

D/m

F504904 5/3/54

362.883
is
Airquip Machinery Pty. Limited
now the registered proprietor of the land within described.
See TRANSFER No. T362883 dated 2nd May 19 63
Entered 24th June 19 63
Jawatson
REGISTRAR GENERAL

m
No. T362884 MORTGAGE dated 17th May 19 63
to Australia and New Zealand
Bank Limited
Entered 24th June 19 63
Jawatson
REGISTRAR GENERAL
Discharged
22-6-77
8-8-1974

To
R3601
TRANSFER NO. R360728 Francesco Giunta of Ashbury
g Company Director and Angela Denise Giunta his wife
2 and Santo Giunta of Haberfield Company Director
as tenants in common are
now the registered proprietors of the land within described
Registered 8-8-1979
Ben
REGISTRAR GENERAL

M
19
MORTGAGE No. R360729 to The National Bank of
Australasia Limited
Registered 8-8-1979
Ben
REGISTRAR GENERAL
Discharged
T833699 JT 30/1/81
15-11-1983

REGISTERED PROPRIETOR Francesco Giunta and
Angela Denise Giunta as joint tenants
by transfer T 833700 Registered 15-11-1983
Ben
REGISTRAR GENERAL

B
T 833701 mortgage to National Commercial
Banking Corporation of Australia Limited
Registered 15-11-1983
Ben
REGISTRAR GENERAL

DP 748418 Registered
This folio is cancelled as to whole part upon creation
of computer folios for lots 81 in the
mentioned plan.



R360727 DP
8/6/81
9/11/81
T833699 DP
-700/81
-701/81
DP 748418 R

TITLE SEARCH

Title Reference: 3/625664

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 3/625664

SEARCH DATE	TIME	EDITION NO	DATE
28/3/2016	2:51 PM	1	21/6/1989

LAND

LOT 3 IN DEPOSITED PLAN 625664
AT PETERSHAM
LOCAL GOVERNMENT AREA MARRICKVILLE
PARISH OF PETERSHAM COUNTY OF CUMBERLAND
TITLE DIAGRAM DP625664

FIRST SCHEDULE

FRANK GIUNTA
ANGELA DENISE GIUNTA
AS JOINT TENANTS (T Y436230)

SECOND SCHEDULE (5 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 615934 RIGHT OF DRAINAGE AFFECTING THE PART OF THE LAND
ABOVE DESCRIBED SHOWN IN DP625664
- 3 DP625664 RIGHT OF CARRIAGEWAY AFFECTING THE PART OF THE LAND
ABOVE DESCRIBED IN DP625664
- 4 Y436231 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED
- * 5 AJ557623 CAVEAT BY ILLUMINATE LIVING PTY LTD

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES
NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED
CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS
RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE
IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND
COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 28/3/2016

TITLE SEARCH

Title Reference: 81/748418

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 81/748418

SEARCH DATE	TIME	EDITION NO	DATE
28/3/2016	2:51 PM	1	7/8/1987

LAND

LOT 81 IN DEPOSITED PLAN 748418
AT PETERSHAM
LOCAL GOVERNMENT AREA MARRICKVILLE
PARISH OF PETERSHAM COUNTY OF CUMBERLAND
TITLE DIAGRAM DP748418

FIRST SCHEDULE

FRANCESCO GIUNTA
ANGELA DENISE GIUNTA
AS JOINT TENANTS

SECOND SCHEDULE (3 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 T833701 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED
- * 3 AJ557605 CAVEAT BY ILLUMINATE LIVING PTY LTD

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 28/3/2016

HISTORY OF TITLE TRANSACTION

Title Reference: 3/625664

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

28/3/2016 2:51PM

FOLIO: 3/625664

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 14811 FOL 147

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
15/9/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
21/6/1989	Y436229	DISCHARGE OF MORTGAGE	
21/6/1989	Y436230	TRANSFER	
21/6/1989	Y436231	MORTGAGE	EDITION 1
12/6/2015	AJ557623	CAVEAT	

*** END OF SEARCH ***

PRINTED ON 28/3/2016



HISTORY OF TITLE TRANSACTION

Title Reference: 81/748418

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

28/3/2016 2:51PM

FOLIO: 81/748418

First Title(s): OLD SYSTEM
Prior Title(s): VOL 6440 FOL 179

Recorded	Number	Type of Instrument	C.T. Issue
-----	-----	-----	-----
7/8/1987	DP748418	DEPOSITED PLAN	FOLIO CREATED EDITION 1
12/6/2015	AJ557605	CAVEAT	

*** END OF SEARCH ***

APPENDIX B: OEH NOTICE SUMMARY



[Home](#) [Contaminated land](#) [Record of notices](#)

Search results

Your search for: Suburb: LEWISHAM

did not find any records in our database.

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

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

More information about particular sites may be available from:

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

See [What's in the record and What's not in the record](#).

If you want to know whether a specific site has been the subject of notices issued by the EPA under the CLM Act, we suggest that you search by Local Government Area only and carefully review the sites that are listed.

This public record provides information about sites regulated by the EPA under the Contaminated Land Management Act 1997, including sites currently and previously regulated under the Environmentally Hazardous Chemicals Act 1985. Your inquiry using the above search criteria has not matched any record of current or former regulation. You should consider searching again using different criteria. The fact that a site does not appear on the record does not necessarily mean that it is not affected by contamination. The site may have been notified to the EPA but not yet assessed, or contamination may be present but the site is not yet being regulated by the EPA. Further information about particular sites may be available from the appropriate planning authority, for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act. In addition the EPA may be regulating contamination at the site through a licence under the Protection of the Environment Operations Act 1997. You may wish to search the POEO public register. [POEO public register](#)

Search Again

Refine Search

Search TIP

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

... [more search tips](#)

Connect

28 March 2016

APPENDIX C: NATA ACCREDITED LAB RESULTS

Certificate of Analysis

Benvion Group
PO BOX 4405
East Gosford
NSW 2250



NATA Accredited
Accreditation Number 1261
Site Number 18217

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.

Attention: Ben Buckley

Report 491846-W

Project name LEWISHAM E795

Received Date Mar 07, 2016

Client Sample ID			GW1/BH1	GW2/BH3	GW3/BH4	GW4/BH6
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S16-Ma06185	S16-Ma06186	S16-Ma06187	S16-Ma06188
Date Sampled			Mar 07, 2016	Mar 07, 2016	Mar 07, 2016	Mar 07, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	0.4
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	0.40
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	92	89	91	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Indeno(1,2,3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			GW1/BH1 Water	GW2/BH3 Water	GW3/BH4 Water	GW4/BH6 Water
Sample Matrix			S16-Ma06185	S16-Ma06186	S16-Ma06187	S16-Ma06188
Eurofins mgt Sample No.			Mar 07, 2016	Mar 07, 2016	Mar 07, 2016	Mar 07, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
2-Fluorobiphenyl (surr.)	1	%	90	85	96	71
p-Terphenyl-d14 (surr.)	1	%	89	99	106	83
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	0.5
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Heavy Metals						
Arsenic	0.005	mg/L	0.009	< 0.005	< 0.005	< 0.005
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Chromium	0.005	mg/L	0.023	< 0.005	< 0.005	< 0.005
Copper	0.005	mg/L	0.050	< 0.005	0.021	0.019
Lead	0.005	mg/L	0.061	< 0.005	< 0.005	0.006
Mercury	0.0001	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001
Nickel	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Zinc	0.005	mg/L	0.12	0.046	0.055	0.068

Client Sample ID			GW5/BH8 Water	GW6/BH10 Water	GW7/BH12 Water	D1 Water
Sample Matrix			S16-Ma06189	S16-Ma06190	S16-Ma06191	S16-Ma06192
Eurofins mgt Sample No.			Mar 07, 2016	Mar 07, 2016	Mar 07, 2016	Mar 07, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	87	92	88	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GW5/BH8 Water S16-Ma06189 Mar 07, 2016	GW6/BH10 Water S16-Ma06190 Mar 07, 2016	GW7/BH12 Water S16-Ma06191 Mar 07, 2016	D1 Water S16-Ma06192 Mar 07, 2016
Polycyclic Aromatic Hydrocarbons						
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Indeno(1,2,3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	90	67	87	84
p-Terphenyl-d14 (surr.)	1	%	109	77	104	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Heavy Metals						
Arsenic	0.005	mg/L	0.092	0.23	0.018	0.008
Cadmium	0.0005	mg/L	0.0044	0.018	< 0.0005	< 0.0005
Chromium	0.005	mg/L	0.098	0.92	0.007	0.020
Copper	0.005	mg/L	0.73	2.2	0.032	0.043
Lead	0.005	mg/L	0.13	1.1	0.026	0.050
Mercury	0.0001	mg/L	0.0006	0.0037	0.0001	0.0001
Nickel	0.005	mg/L	0.38	1.3	0.024	< 0.005
Zinc	0.005	mg/L	3.7	6.1	0.16	0.11

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	D2 Water S16-Ma06193 Mar 07, 2016	TRIP BLANK Water S16-Ma06194 Not Provided	TRIP SPIKE Water S16-Ma06195 Not Provided
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	< 0.02	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	93%
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	-	-
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	115%
Toluene	0.001	mg/L	< 0.001	< 0.001	103%
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	106%
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	101%
o-Xylene	0.001	mg/L	< 0.001	< 0.001	105%
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	102%
4-Bromofluorobenzene (surr.)	1	%	88	89	100

Client Sample ID			D2	TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			S16-Ma06193	S16-Ma06194	S16-Ma06195
Date Sampled			Mar 07, 2016	Not Provided	Not Provided
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH C6-C10	0.02	mg/L	-	< 0.02	82%
Volatile Organics					
Naphthalene ^{N02}	0.01	mg/L	-	< 0.01	88%
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	%	83	-	-
p-Terphenyl-d14 (surr.)	1	%	99	-	-
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	-	-
Heavy Metals					
Arsenic	0.005	mg/L	0.055	-	-
Cadmium	0.0005	mg/L	0.0026	-	-
Chromium	0.005	mg/L	0.058	-	-
Copper	0.005	mg/L	0.43	-	-
Lead	0.005	mg/L	0.081	-	-
Mercury	0.0001	mg/L	0.0004	-	-
Nickel	0.005	mg/L	0.23	-	-
Zinc	0.005	mg/L	2.1	-	-

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
TRH C6-C10 less BTEX (F1) - Method: LM-LTM-ORG-2010	Sydney	Mar 10, 2016	14 Day
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Sydney	Mar 11, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Mar 10, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Mar 10, 2016	7 Day
Volatile Organics - Method: E016 Volatile Organic Compounds (VOC)	Sydney	Mar 10, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Mar 10, 2016	7 Day
Polycyclic Aromatic Hydrocarbons - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Mar 11, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Mar 11, 2016	7 Day
Metals M8 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 10, 2016	28 Day

Company Name: Benviron Group
Address: PO BOX 4405
East Gosford
NSW 2250
Project Name: LEWISHAM E795

Order No.:
Report #: 491846
Phone:
Fax:

Received: Mar 9, 2016 9:20 AM
Due: Mar 16, 2016
Priority: 5 Day
Contact Name: Ben Buckley

Eurofins | mgt Client Manager: Andrew Black

Sample Detail					Eurofins mgt Suite B7	BTEX and Volatile TRH
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217					X	X
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
GW1/BH1	Mar 07, 2016		Water	S16-Ma06185	X	
GW2/BH3	Mar 07, 2016		Water	S16-Ma06186	X	
GW3/BH4	Mar 07, 2016		Water	S16-Ma06187	X	
GW4/BH6	Mar 07, 2016		Water	S16-Ma06188	X	
GW5/BH8	Mar 07, 2016		Water	S16-Ma06189	X	
GW6/BH10	Mar 07, 2016		Water	S16-Ma06190	X	
GW7/BH12	Mar 07, 2016		Water	S16-Ma06191	X	
D1	Mar 07, 2016		Water	S16-Ma06192	X	
D2	Mar 07, 2016		Water	S16-Ma06193	X	
TRIP BLANK	Not Provided		Water	S16-Ma06194		X

Company Name: Benviron Group
Address: PO BOX 4405
East Gosford
NSW 2250
Project Name: LEWISHAM E795

Order No.:
Report #: 491846
Phone:
Fax:

Received: Mar 9, 2016 9:20 AM
Due: Mar 16, 2016
Priority: 5 Day
Contact Name: Ben Buckley

Eurofins | mgt Client Manager: Andrew Black

Sample Detail					Eurofins mgt Suite B7	BTEX and Volatile TRH
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217					X	X
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
TRIP SPIKE	Not Provided		Water	S16-Ma06195		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/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							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Volatile Organics							
Naphthalene	mg/L	< 0.01			0.01	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							
Heavy Metals							
Arsenic	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0005			0.0005	Pass	
Chromium	mg/L	< 0.005			0.005	Pass	
Copper	mg/L	< 0.005			0.005	Pass	
Lead	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	113			70-130	Pass	
TRH C10-C14	%	78			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	119			70-130	Pass	
Toluene	%	104			70-130	Pass	
Ethylbenzene	%	109			70-130	Pass	
m&p-Xylenes	%	103			70-130	Pass	
o-Xylene	%	107			70-130	Pass	
Xylenes - Total	%	104			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH C6-C10	%	108			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
Naphthalene	%	96			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	96			70-130	Pass	
Acenaphthylene	%	92			70-130	Pass	
Anthracene	%	113			70-130	Pass	
Benz(a)anthracene	%	124			70-130	Pass	
Benzo(a)pyrene	%	90			70-130	Pass	
Benzo(b&j)fluoranthene	%	81			70-130	Pass	
Benzo(g,h,i)perylene	%	120			70-130	Pass	
Benzo(k)fluoranthene	%	73			70-130	Pass	
Chrysene	%	101			70-130	Pass	
Dibenz(a,h)anthracene	%	82			70-130	Pass	
Fluoranthene	%	80			70-130	Pass	
Fluorene	%	104			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	84			70-130	Pass	
Naphthalene	%	107			70-130	Pass	
Phenanthrene	%	89			70-130	Pass	
Pyrene	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	86			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	93			70-130	Pass	
Cadmium	%	98			70-130	Pass	
Chromium	%	88			70-130	Pass	
Copper	%	89			70-130	Pass	
Lead	%	99			70-130	Pass	
Mercury	%	97			70-130	Pass	
Nickel	%	92			70-130	Pass	
Zinc	%	92			70-130	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 C6-C9	S16-Ma10950	NCP	%	91			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-Ma10950	NCP	%	91			70-130	Pass	
Toluene	S16-Ma10950	NCP	%	94			70-130	Pass	
Ethylbenzene	S16-Ma10950	NCP	%	104			70-130	Pass	
m&p-Xylenes	S16-Ma10950	NCP	%	100			70-130	Pass	
o-Xylene	S16-Ma10950	NCP	%	106			70-130	Pass	
Xylenes - Total	S16-Ma10950	NCP	%	102			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH C6-C10	S16-Ma10950	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
Naphthalene	S16-Ma10950	NCP	%	94			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-Ma06193	CP	%	93			70-130	Pass	
Cadmium	S16-Ma06193	CP	%	88			70-130	Pass	
Chromium	S16-Ma06193	CP	%	91			70-130	Pass	
Copper	S16-Ma06193	CP	%	95			70-130	Pass	
Mercury	S16-Ma06193	CP	%	84			70-130	Pass	
Nickel	S16-Ma06193	CP	%	97			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	S16-Ma10949	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-Ma10949	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S16-Ma10949	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S16-Ma10949	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S16-Ma10949	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S16-Ma10949	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S16-Ma10949	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C10	S16-Ma10949	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
Naphthalene	S16-Ma10949	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Ma06192	CP	mg/L	0.008	0.008	<1	30%	Pass	
Cadmium	S16-Ma06192	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Chromium	S16-Ma06192	CP	mg/L	0.020	0.020	<1	30%	Pass	
Copper	S16-Ma06192	CP	mg/L	0.043	0.043	1.0	30%	Pass	
Lead	S16-Ma06192	CP	mg/L	0.050	0.051	1.0	30%	Pass	
Mercury	S16-Ma06192	CP	mg/L	0.0001	0.0001	<1	30%	Pass	
Nickel	S16-Ma06192	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	S16-Ma06192	CP	mg/L	0.11	0.11	1.0	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

Authorised By

Andrew Black	Analytical Services Manager
Ivan Taylor	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)



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

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CERTIFICATE OF ANALYSIS

143060

Client:

Benviron Group
PO Box 4405
East Gosford
NSW 2250

Attention: Ben Buckley

Sample log in details:

Your Reference:	<u>E795, Lewisham</u>
No. of samples:	2 Waters
Date samples received / completed instructions received	07/03/16 / 10/03/16

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:	17/03/16 / 15/03/16
Date of Preliminary Report:	Not Issued

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Results Approved By:


Jacinta Hurst
Laboratory Manager

Envirolab Reference: 143060
Revision No: R 00



vTRH(C6-C10)/BTEXN in Water			
Our Reference:	UNITS	143060-1	143060-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	07/03/2016	07/03/2016
Type of sample		Water	Water
Date extracted	-	10/03/2016	10/03/2016
Date analysed	-	11/03/2016	11/03/2016
TRHC ₆ - C ₉	µg/L	<10	<10
TRHC ₆ - C ₁₀	µg/L	<10	<10
TRHC ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	102	101
Surrogate toluene-d8	%	99	98
Surrogate 4-BFB	%	100	99

svTRH (C10-C40) in Water			
Our Reference:	UNITS	143060-1	143060-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	07/03/2016	07/03/2016
Type of sample		Water	Water
Date extracted	-	11/03/2016	11/03/2016
Date analysed	-	11/03/2016	11/03/2016
TRHC ₁₀ - C ₁₄	µg/L	<50	<50
TRHC ₁₅ - C ₂₈	µg/L	<100	<100
TRHC ₂₉ - C ₃₆	µg/L	<100	<100
TRH>C ₁₀ - C ₁₆	µg/L	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50
TRH>C ₁₆ - C ₃₄	µg/L	<100	<100
TRH>C ₃₄ - C ₄₀	µg/L	<100	<100
Surrogate o-Terphenyl	%	94	97

PAHs in Water			
Our Reference:	UNITS	143060-1	143060-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	07/03/2016	07/03/2016
Type of sample		Water	Water
Date extracted	-	11/03/2016	11/03/2016
Date analysed	-	11/03/2016	11/03/2016
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	102	102

HM in water - dissolved			
Our Reference:	UNITS	143060-1	143060-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	07/03/2016	07/03/2016
Type of sample		Water	Water
Date prepared	-	11/03/2016	11/03/2016
Date analysed	-	11/03/2016	11/03/2016
Arsenic-Dissolved	µg/L	<1	<1
Cadmium-Dissolved	µg/L	<0.1	0.2
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	<1	2
Lead-Dissolved	µg/L	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	2	53
Zinc-Dissolved	µg/L	64	100

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.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

Client Reference: E795, Lewisham

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Water						Base II Duplicate II %RPD		
Date extracted	-			10/03/2016	[NT]	[NT]	LCS-W2	10/03/2016
Date analysed	-			11/03/2016	[NT]	[NT]	LCS-W2	11/03/2016
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W2	116%
TRHC ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W2	116%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	115%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	115%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	115%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W2	117%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	116%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	101	[NT]	[NT]	LCS-W2	100%
Surrogate toluene-d8	%		Org-016	100	[NT]	[NT]	LCS-W2	101%
Surrogate 4-BFB	%		Org-016	99	[NT]	[NT]	LCS-W2	99%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Water						Base II Duplicate II %RPD		
Date extracted	-			11/03/2016	143060-1	11/03/2016 11/03/2016	LCS-W1	11/03/2016
Date analysed	-			11/03/2016	143060-1	11/03/2016 11/03/2016	LCS-W1	11/03/2016
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	143060-1	<50 <50	LCS-W1	120%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	143060-1	<100 <100	LCS-W1	129%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	143060-1	<100 <100	LCS-W1	113%
TRH>C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	143060-1	<50 <50	LCS-W1	120%
TRH>C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	143060-1	<100 <100	LCS-W1	129%
TRH>C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	143060-1	<100 <100	LCS-W1	113%
Surrogate o-Terphenyl	%		Org-003	83	143060-1	94 94 RPD: 0	LCS-W1	77%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Date extracted	-			11/03/2016	143060-1	11/03/2016 11/03/2016	LCS-W1	11/03/2016
Date analysed	-			11/03/2016	143060-1	11/03/2016 11/03/2016	LCS-W1	11/03/2016
Naphthalene	µg/L	1	Org-012	<1	143060-1	<1 <1	LCS-W1	103%
Acenaphthylene	µg/L	1	Org-012	<1	143060-1	<1 <1	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012	<1	143060-1	<1 <1	[NR]	[NR]
Fluorene	µg/L	1	Org-012	<1	143060-1	<1 <1	LCS-W1	131%
Phenanthrene	µg/L	1	Org-012	<1	143060-1	<1 <1	LCS-W1	115%
Anthracene	µg/L	1	Org-012	<1	143060-1	<1 <1	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012	<1	143060-1	<1 <1	LCS-W1	103%
Pyrene	µg/L	1	Org-012	<1	143060-1	<1 <1	LCS-W1	105%
Benzo(a)anthracene	µg/L	1	Org-012	<1	143060-1	<1 <1	[NR]	[NR]

Client Reference: E795, Lewisham

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Chrysene	µg/L	1	Org-012	<1	143060-1	<1 <1	LCS-W1	108%
Benzo(b,j+k) fluoranthene	µg/L	2	Org-012	<2	143060-1	<2 <2	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012	<1	143060-1	<1 <1	LCS-W1	113%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	143060-1	<1 <1	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	143060-1	<1 <1	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	143060-1	<1 <1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	114	143060-1	102 101 RPD: 1	LCS-W1	103%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			11/03/2016	143060-1	11/03/2016 11/03/2016	LCS-W1	11/03/2016
Date analysed	-			11/03/2016	143060-1	11/03/2016 11/03/2016	LCS-W1	11/03/2016
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	143060-1	<1 <1	LCS-W1	102%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	143060-1	<0.1 <0.1	LCS-W1	102%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	143060-1	<1 <1	LCS-W1	95%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	143060-1	<1 <1	LCS-W1	106%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	143060-1	<1 <1	LCS-W1	103%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	143060-1	<0.05 [N/T]	LCS-W1	100%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	143060-1	2 2 RPD: 0	LCS-W1	102%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	143060-1	64 63 RPD: 2	LCS-W1	101%

Report Comments:

Dissolved Metals: no preserved sample was received, therefore the unpreserved sample was filtered through 0.45um filter at the lab.
Note: there is a possibility some elements may be underestimated.

2 bottles received for SS2. Analysis for dissolved metals was undertaken on the clearer sample as instructed by client.

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 batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

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

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.



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET49324/ 52504 / 1 - 16
Your ref : E795- Lewisham
NATA Accreditation No: 14484

15 March 2016

Benviron Group
P O Box 4405
East Gosford NSW 2250



Accredited for compliance with ISO/IEC 17025.

Attn: Mr Ben Buckley

Dear Ben

Asbestos Identification

This report presents the results of sixteen samples, forwarded by Benviron Group on 9 March 2016, for analysis for asbestos.

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

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method (**Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction**) (**Qualitative Analysis only**).

The report also provides approximate weights and percentages, categories of asbestos forms appearing in the sample, such as **AF**(Asbestos Fines), **FA**(Friable Asbestos and **ACM** (Asbestos Containing Material), also satisfying the requirements of the WA/ NEPM Guidelines)

3. Results : **Sample No. 1. ASET49324 / 52504 / 1. BH1.**
Approx dimensions 10.0 cm x 10.0 cm x 6.2 cm
The sample consisted of a mixture of clayish soil, stones, fibres^, fragments of plaster, corroded metal, glass, cement, plastic and brick
Chrysotile^ (Approximate weight= 0.003g) asbestos detected.
Approximate total weight of asbestos (AF< 7mm / Loose fibres) = 0.003g
Approximate total weight of soil sample = 650.0g
Approximate w/w % = 0.0005%

Sample No. 2. ASET49324 / 52504 / 2. BH2.
Approx dimensions 11.0 cm x 10.0 cm x 7.0 cm
Approx total dry weight of soil = 820.0g
The sample consisted of a mixture of clayish soil, stones, sandstone, fragments of plaster, glass, cement and brick
No asbestos detected.

Sample No. 3. ASET49324 / 52504 / 3. BH3.
Approx dimensions 10.0 cm x 10.0 cm x 7.5 cm
Approx total dry weight of soil = 760.0g
The sample consisted of a mixture of clayish soil, stones, sandstone, fragments of plaster, glass and cement.
No asbestos detected.

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



Sample No. 4. ASET49324 / 52504 / 4. BH4.

Approx dimensions 10.0 cm x 10.0 cm x 6.5 cm

Approx total dry weight of soil = 690.0g

The sample consisted of a mixture of clayish soil, stones, fragments of plaster, corroded metal, glass, coal like material and brick

No asbestos detected.

Sample No. 5. ASET49324 / 52504 / 5. BH5.

Approx dimensions 10.0 cm x 10.0 cm x 6.2 cm

Approx total dry weight of soil = 650.0g

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

No asbestos detected.

Sample No. 6. ASET49324 / 52504 / 6. BH6.

Approx dimensions 10.0 cm x 10.0 cm x 7.6 cm

Approx total dry weight of soil = 780.0g

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

No asbestos detected.

Sample No. 7. ASET49324 / 52504 / 7. BH7.

Approx dimensions 10.0 cm x 10.0 cm x 6.8 cm

Approx total dry weight of soil = 700.0g

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

No asbestos detected.

Sample No. 8. ASET49324 / 52504 / 8. BH8.

Approx dimensions 10.0 cm x 10.0 cm x 6.5 cm

Approx total dry weight of soil = 670.0g

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

No asbestos detected.

Sample No. 9. ASET49324 / 52504 / 9. BH9.

Approx dimensions 10.0 cm x 10.0 cm x 6.7 cm

Approx total dry weight of soil = 680.0g

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

No asbestos detected.

Sample No. 10. ASET49324 / 52504 / 10. BH10.

Approx dimensions 10.0 cm x 10.0 cm x 6.2 cm

Approx total dry weight of soil = 655.0g

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

No asbestos detected.

Sample No. 11. ASET49324 / 52504 / 11. BH11.

Approx dimensions 10.0 cm x 10.0 cm x 7.2 cm

Approx total dry weight of soil = 730.0g

The sample consisted of a mixture of clayish sandy soil, stones, sandstone, plant matter, fragments of plaster and glass.

No asbestos detected.



Sample No. 12. ASET49324 / 52504 / 12. BH12.

Approx dimensions 10.0 cm x 10.0 cm x 6.8 cm

Approx total dry weight of soil = 695.0g

The sample consisted of a mixture of clayish sandy soil, stones, sandstone, plant matter, fragments of plaster and glass.

No asbestos detected.

Sample No. 13. ASET49324 / 52504 / 13. BH13.

Approx dimensions 10.0 cm x 10.0 cm x 6.5 cm

Approx total dry weight of soil = 658.0g

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

No asbestos detected.

Sample No. 14. ASET49324 / 52504 / 14. BH14.

Approx dimensions 10.0 cm x 10.0 cm x 5.8 cm

Approx total dry weight of soil = 600.0g

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

No asbestos detected.

Sample No. 15. ASET49324 / 52504 / 15. BH15.

Approx dimensions 10.0 cm x 10.0 cm x 5.5 cm

Approx total dry weight of soil = 570.0g

The sample consisted of a mixture of clayish sandy soil, stones, sandstone, plant matter and fragments of cement.

No asbestos detected.

Sample No. 16. ASET49324 / 52504 / 16. BH16.

Approx dimensions 10.0 cm x 10.0 cm x 7.5 cm

Approx total dry weight of soil = 775.0g

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

No asbestos detected.

Analysed and reported by,

Chamath Annakkage. BSc
Environmental Technician/Approved Identifier

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Signatory



Accredited for compliance with ISO/IEC 17025.

This report is consistent with the analytical procedures and reporting recommendations in the Western Australia Guidelines for the Assessment Remediation and Management of Asbestos contaminated sites in Western Australia and it also satisfies the requirements of the current NEPM Guidelines. NATA Accreditation does not cover the performance of this service (NATA ISO/IEC17025 AUG 2014).

Disclaimers;

The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos, as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation only covers the qualitative part of the results reported. This weight disclaimer also covers weight / weight percentages given.

ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.

AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.

FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

^ denotes loose fibres of relevant asbestos types detected in soil/dust and fragments of ACM smaller than 7mm diameter.

*** denotes asbestos detected in ACM in bonded form.**

denotes FA.

All samples indicating "No asbestos detected" are assumed to be less than 0.001 % unless the actual approximate weight is given.

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative.

Certificate of Analysis

Benvion Group
PO BOX 4405
East Gosford
NSW 2250



NATA Accredited
Accreditation Number 1261
Site Number 18217

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.

Attention: Ben Buckley

Report 492318-S
Project name LEWISHAM
Project ID E795
Received Date Mar 09, 2016

Client Sample ID			BH1 0.5 Soil	BH1 3.1 Soil	BH2 0.4 Soil	BH2 2.3 Soil
Sample Matrix			S16-Ma09076	S16-Ma09077	S16-Ma09078	S16-Ma09079
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
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	130	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	130	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	260	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	96	72	70	87
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	1.9	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	2.2	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.4	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	1.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	1.3	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	1.5	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	1.1	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	1.0	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	1.2	-	< 0.5	-
Chrysene	0.5	mg/kg	1.3	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	2.8	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			BH1 0.5	BH1 3.1	BH2 0.4	BH2 2.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09076	S16-Ma09077	S16-Ma09078	S16-Ma09079
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	1.5	-	< 0.5	-
Pyrene	0.5	mg/kg	2.8	-	< 0.5	-
Total PAH*	0.5	mg/kg	16	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	83	-	83	-
p-Terphenyl-d14 (surr.)	1	%	88	-	85	-
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	-
α-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
β-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
δ-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	-
γ-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	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchloredate (surr.)	1	%	120	-	92	-
Tetrachloro-m-xylene (surr.)	1	%	102	-	78	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchloredate (surr.)	1	%	120	-	92	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	250	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	3.6	16	< 2	18
Cadmium	0.4	mg/kg	0.4	< 0.4	0.6	< 0.4
Chromium	5	mg/kg	16	13	23	20
Copper	5	mg/kg	47	< 5	120	< 5
Lead	5	mg/kg	560	12	68	10

Client Sample ID			BH1 0.5	BH1 3.1	BH2 0.4	BH2 2.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09076	S16-Ma09077	S16-Ma09078	S16-Ma09079
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.05	mg/kg	0.13	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	7.4	< 5	150	< 5
Zinc	5	mg/kg	400	< 5	130	< 5
% Moisture	1	%	18	18	6.2	17

Client Sample ID			BH3 0.8	BH3 2.1	BH4 0.3	BH4 1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09080	S16-Ma09081	S16-Ma09082	S16-Ma09083
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 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	160	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	110	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	270	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	92	94	80	88
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	4.3	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	4.5	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	4.8	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	2.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	3.3	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	2.6	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	2.4	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	2.6	-	< 0.5	-
Chrysene	0.5	mg/kg	2.6	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	4.2	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	1.7	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			BH3 0.8	BH3 2.1	BH4 0.3	BH4 1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09080	S16-Ma09081	S16-Ma09082	S16-Ma09083
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Phenanthrene	0.5	mg/kg	1.5	-	< 0.5	-
Pyrene	0.5	mg/kg	4.6	-	< 0.5	-
Total PAH*	0.5	mg/kg	28	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	79	-	78	-
p-Terphenyl-d14 (surr.)	1	%	82	-	57	-
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	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchloroendate (surr.)	1	%	125	-	97	-
Tetrachloro-m-xylene (surr.)	1	%	92	-	82	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchloroendate (surr.)	1	%	125	-	97	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	270	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	4.0	4.1	3.8	5.9
Cadmium	0.4	mg/kg	0.9	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.6	< 5	8.9	7.6
Copper	5	mg/kg	190	12	35	< 5
Lead	5	mg/kg	250	< 5	32	9.4
Mercury	0.05	mg/kg	0.23	0.18	< 0.05	< 0.05

Client Sample ID			BH3 0.8	BH3 2.1	BH4 0.3	BH4 1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09080	S16-Ma09081	S16-Ma09082	S16-Ma09083
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	5	mg/kg	12	< 5	20	< 5
Zinc	5	mg/kg	320	< 5	47	< 5
% Moisture	1	%	17	11	12	16

Client Sample ID			BH5 0.4	BH5 1.8	BH6 0.4	BH6 1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09084	S16-Ma09085	S16-Ma09086	S16-Ma09087
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 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
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	0.9	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	1.0	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	91	85	90	87
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	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			BH5 0.4	BH5 1.8	BH6 0.4	BH6 1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09084	S16-Ma09085	S16-Ma09086	S16-Ma09087
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	78	-	79	-
p-Terphenyl-d14 (surr.)	1	%	78	-	80	-
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	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	118	-	130	-
Tetrachloro-m-xylene (surr.)	1	%	96	-	107	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	118	-	130	-
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
Heavy Metals						
Arsenic	2	mg/kg	7.0	5.1	13	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	10	< 5	20	< 5
Copper	5	mg/kg	31	< 5	46	5.1
Lead	5	mg/kg	37	10.0	610	10
Mercury	0.05	mg/kg	< 0.05	< 0.05	0.15	< 0.05
Nickel	5	mg/kg	20	< 5	12	< 5
Zinc	5	mg/kg	72	< 5	370	< 5

Client Sample ID			BH5 0.4	BH5 1.8	BH6 0.4	BH6 1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09084	S16-Ma09085	S16-Ma09086	S16-Ma09087
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
% Moisture	1	%	8.9	16	21	14

Client Sample ID			BH7 0.2	BH7 1.6	BH8 0.5	BH9 0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Ma09088	S16-Ma09089	S16-Ma09090	S16-Ma09091
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	23
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
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.2
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	0.5	1.1
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	0.5	1.3
4-Bromofluorobenzene (surr.)	1	%	88	92	86	99
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	24
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	23
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	1.0	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.3	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.5	-	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	0.7	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.7	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.8	-	< 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	0.6	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	0.7	-	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.5	-	< 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	0.7	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	1.4	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	7.6	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	75	-	81	78
p-Terphenyl-d14 (surr.)	1	%	78	-	80	74

Client Sample ID			BH7 0.2 Soil	BH7 1.6 Soil	BH8 0.5 Soil	BH9 0.3 Soil
Sample Matrix			S16-Ma09088	S16-Ma09089	S16-Ma09090	S16-Ma09091
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	-	< 1	< 1
Dibutylchlorendate (surr.)	1	%	130	-	107	105
Tetrachloro-m-xylene (surr.)	1	%	104	-	89	86
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	130	-	107	105
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
Heavy Metals						
Arsenic	2	mg/kg	12	2.8	9.9	7.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	22	5.3	12	10
Copper	5	mg/kg	20	< 5	38	29
Lead	5	mg/kg	97	12	33	27
Mercury	0.05	mg/kg	0.06	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	27	22
Zinc	5	mg/kg	47	< 5	97	79
% Moisture	1	%	23	16	11	10

Client Sample ID			BH10 0.8 Soil	BH10 3.0 Soil	BH11 1.2 Soil	BH11 5.0 Soil
Sample Matrix			S16-Ma09092	S16-Ma09093	S16-Ma09094	S16-Ma09095
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
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
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97	87	86	73
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	1.7	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	2.0	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	1.6	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	1.2	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	1.3	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	0.8	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	0.8	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	1.3	-	< 0.5	-
Chrysene	0.5	mg/kg	1.2	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	2.6	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	0.6	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	1.6	-	< 0.5	-
Pyrene	0.5	mg/kg	2.3	-	< 0.5	-
Total PAH*	0.5	mg/kg	15	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	79	-	80	-
p-Terphenyl-d14 (surr.)	1	%	85	-	80	-
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	-

Client Sample ID			BH10 0.8 Soil	BH10 3.0 Soil	BH11 1.2 Soil	BH11 5.0 Soil
Sample Matrix						
Eurofins mgt Sample No.			S16-Ma09092	S16-Ma09093	S16-Ma09094	S16-Ma09095
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
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	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	70	-	123	-
Tetrachloro-m-xylene (surr.)	1	%	105	-	94	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	70	-	123	-
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
Heavy Metals						
Arsenic	2	mg/kg	8.1	6.3	5.7	5.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	21	10.0	15	5.4
Copper	5	mg/kg	45	17	< 5	9.9
Lead	5	mg/kg	310	22	19	12
Mercury	0.05	mg/kg	0.26	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	6.8	< 5	< 5	< 5
Zinc	5	mg/kg	160	29	24	21
% Moisture	1	%	22	12	24	18

Client Sample ID			BH12 0.4 Soil	BH12 4.2 Soil	BH13 0.5 Soil	BH13 1.2 Soil
Sample Matrix			S16-Ma09096	S16-Ma09097	S16-Ma09098	S16-Ma09099
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
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	240	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	59	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	300	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	75	91	84	95
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	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.8	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.3	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	1.0	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	0.9	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	0.8	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	0.6	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	0.9	-
Chrysene	0.5	mg/kg	< 0.5	-	0.9	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	1.9	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	1.0	-
Pyrene	0.5	mg/kg	< 0.5	-	1.7	-
Total PAH*	0.5	mg/kg	< 0.5	-	9.7	-
2-Fluorobiphenyl (surr.)	1	%	81	-	76	-
p-Terphenyl-d14 (surr.)	1	%	80	-	78	-
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	-

Client Sample ID			BH12 0.4 Soil	BH12 4.2 Soil	BH13 0.5 Soil	BH13 1.2 Soil
Sample Matrix			S16-Ma09096	S16-Ma09097	S16-Ma09098	S16-Ma09099
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
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	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	124	-	127	-
Tetrachloro-m-xylene (surr.)	1	%	96	-	89	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	124	-	127	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	300	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	< 2	5.4	4.9	6.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.1	7.5	14	8.2
Copper	5	mg/kg	20	13	59	15
Lead	5	mg/kg	58	52	340	49
Mercury	0.05	mg/kg	< 0.05	< 0.05	0.21	< 0.05
Nickel	5	mg/kg	6.5	< 5	16	< 5
Zinc	5	mg/kg	38	13	250	9.4
% Moisture	1	%	14	8.8	20	8.7

Client Sample ID			BH14 0.5 Soil	BH14 1.3 Soil	BH15 0.4 Soil	BH15 1.5 Soil
Sample Matrix			S16-Ma09100	S16-Ma09101	S16-Ma09102	S16-Ma09103
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
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	150	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	110	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	260	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	94	92	95	93
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	-	5.3	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.9	-	5.3	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.4	-	5.3	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	1.1	-	0.8	-
Benz(a)anthracene	0.5	mg/kg	1.0	-	3.2	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	3.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	0.9	-	2.1	-
Benzo(g,h,i)perylene	0.5	mg/kg	0.7	-	2.2	-
Benzo(k)fluoranthene	0.5	mg/kg	1.0	-	2.8	-
Chrysene	0.5	mg/kg	1.1	-	3.0	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	0.8	-
Fluoranthene	0.5	mg/kg	2.1	-	6.2	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	0.6	-	1.7	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	1.1	-	2.6	-
Pyrene	0.5	mg/kg	1.9	-	5.9	-
Total PAH*	0.5	mg/kg	12	-	35	-
2-Fluorobiphenyl (surr.)	1	%	79	-	81	-
p-Terphenyl-d14 (surr.)	1	%	78	-	81	-
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	-

Client Sample ID			BH14 0.5 Soil	BH14 1.3 Soil	BH15 0.4 Soil	BH15 1.5 Soil
Sample Matrix			S16-Ma09100	S16-Ma09101	S16-Ma09102	S16-Ma09103
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
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	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	127	-	125	-
Tetrachloro-m-xylene (surr.)	1	%	93	-	88	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	127	-	125	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	250	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	5.6	3.3	3.6	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	0.5	< 0.4
Chromium	5	mg/kg	13	6.3	7.7	< 5
Copper	5	mg/kg	28	< 5	95	< 5
Lead	5	mg/kg	200	47	420	9.2
Mercury	0.05	mg/kg	0.19	< 0.05	0.15	< 0.05
Nickel	5	mg/kg	5.7	< 5	12	< 5
Zinc	5	mg/kg	120	21	250	< 5
% Moisture	1	%	16	14	13	14

Client Sample ID			BH16 0.6 Soil	BH16 1.4 Soil	D1 Soil	D2 Soil
Sample Matrix			S16-Ma09104	S16-Ma09105	S16-Ma09106	S16-Ma09107
Eurofins mgt Sample No.			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Date Sampled						
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	110	< 50	< 50	52
TRH C29-C36	50	mg/kg	87	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	200	< 50	< 50	52
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	85	77	86	84
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	3.1	-	2.0	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.3	-	2.2	1.0
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.6	-	2.5	1.5
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	1.5	-	1.2	1.6
Benz(a)anthracene	0.5	mg/kg	1.9	-	1.3	1.4
Benzo(a)pyrene	0.5	mg/kg	2.4	-	1.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	1.8	-	1.2	0.9
Benzo(g,h,i)perylene	0.5	mg/kg	1.7	-	0.9	0.9
Benzo(k)fluoranthene	0.5	mg/kg	1.4	-	1.2	1.4
Chrysene	0.5	mg/kg	1.9	-	1.3	1.4
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	3.6	-	2.7	3.1
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	1.3	-	0.8	0.7
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.5	-	1.2	1.6
Pyrene	0.5	mg/kg	3.7	-	2.4	2.8
Total PAH*	0.5	mg/kg	23	-	16	16
2-Fluorobiphenyl (surr.)	1	%	76	-	76	80
p-Terphenyl-d14 (surr.)	1	%	80	-	76	82
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05

Client Sample ID			BH16 0.6 Soil	BH16 1.4 Soil	D1 Soil	D2 Soil
Sample Matrix						
Eurofins mgt Sample No.			S16-Ma09104	S16-Ma09105	S16-Ma09106	S16-Ma09107
Date Sampled			Mar 03, 2016	Mar 03, 2016	Mar 03, 2016	Mar 03, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	-	< 1	< 1
Dibutylchlorendate (surr.)	1	%	122	-	126	127
Tetrachloro-m-xylene (surr.)	1	%	83	-	82	92
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	122	-	126	127
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	190	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	3.2	6.3	5.2	4.4
Cadmium	0.4	mg/kg	0.5	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.3	5.5	13	11
Copper	5	mg/kg	96	11	180	38
Lead	5	mg/kg	410	26	330	220
Mercury	0.05	mg/kg	0.11	< 0.05	0.33	0.15
Nickel	5	mg/kg	7.5	< 5	11	14
Zinc	5	mg/kg	150	7.8	200	170
% Moisture	1	%	14	9.1	19	16

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
Eurofins mgt Suite B6			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Mar 15, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Mar 14, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 14, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 15, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	Mar 14, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
Polycyclic Aromatic Hydrocarbons	Sydney	Mar 15, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Eurofins mgt Suite B13			
Organochlorine Pesticides	Sydney	Mar 15, 2016	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Polychlorinated Biphenyls (PCB)	Sydney	Mar 15, 2016	28 Day
- Method: E013 Polychlorinated Biphenyls (PCB)			
% Moisture	Sydney	Mar 10, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: Benviron Group
Address: PO BOX 4405
East Gosford
NSW 2250
Project Name: LEWISHAM
Project ID: E795

Order No.:
Report #: 492318
Phone:
Fax:

Received: Mar 9, 2016 9:20 PM
Due: Mar 17, 2016
Priority: 5 Day
Contact Name: Ben Buckley

Eurofins | mgt Client Manager: Andrew Black

Sample Detail					Eurofins mgt Suite B6	Eurofins mgt Suite B7	Moisture Set	Eurofins mgt Suite B13
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217					X	X	X	X
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
BH1 0.5	Mar 03, 2016		Soil	S16-Ma09076	X	X	X	
BH1 3.1	Mar 03, 2016		Soil	S16-Ma09077		X		X
BH2 0.4	Mar 03, 2016		Soil	S16-Ma09078	X	X	X	
BH2 2.3	Mar 03, 2016		Soil	S16-Ma09079		X		X
BH3 0.8	Mar 03, 2016		Soil	S16-Ma09080	X	X	X	
BH3 2.1	Mar 03, 2016		Soil	S16-Ma09081		X		X
BH4 0.3	Mar 03, 2016		Soil	S16-Ma09082	X	X	X	
BH4 1.4	Mar 03, 2016		Soil	S16-Ma09083		X		X
BH5 0.4	Mar 03, 2016		Soil	S16-Ma09084	X	X	X	

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Sample Detail					Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7	Eurofins mgt Suite B6
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217					X	X	X	X
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
BH5 1.8	Mar 03, 2016		Soil	S16-Ma09085		X		X
BH6 0.4	Mar 03, 2016		Soil	S16-Ma09086	X	X	X	
BH6 1.5	Mar 03, 2016		Soil	S16-Ma09087		X		X
BH7 0.2	Mar 03, 2016		Soil	S16-Ma09088	X	X	X	
BH7 1.6	Mar 03, 2016		Soil	S16-Ma09089		X		X
BH8 0.5	Mar 03, 2016		Soil	S16-Ma09090	X	X	X	
BH9 0.3	Mar 03, 2016		Soil	S16-Ma09091	X	X	X	
BH10 0.8	Mar 03, 2016		Soil	S16-Ma09092	X	X	X	
BH10 3.0	Mar 03, 2016		Soil	S16-Ma09093		X		X
BH11 1.2	Mar 03, 2016		Soil	S16-Ma09094	X	X	X	

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Sample Detail					Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7	Eurofins mgt Suite B6
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217					X	X	X	X
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
BH11 5.0	Mar 03, 2016		Soil	S16-Ma09095		X		X
BH12 0.4	Mar 03, 2016		Soil	S16-Ma09096	X	X	X	
BH12 4.2	Mar 03, 2016		Soil	S16-Ma09097		X		X
BH13 0.5	Mar 03, 2016		Soil	S16-Ma09098	X	X	X	
BH13 1.2	Mar 03, 2016		Soil	S16-Ma09099		X		X
BH14 0.5	Mar 03, 2016		Soil	S16-Ma09100	X	X	X	
BH14 1.3	Mar 03, 2016		Soil	S16-Ma09101		X		X
BH15 0.4	Mar 03, 2016		Soil	S16-Ma09102	X	X	X	
BH15 1.5	Mar 03, 2016		Soil	S16-Ma09103		X		X
BH16 0.6	Mar 03, 2016		Soil	S16-Ma09104	X	X	X	

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Sample Detail					Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7	Eurofins mgt Suite B6
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217					X	X	X	X
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
BH16 1.4	Mar 03, 2016		Soil	S16-Ma09105		X		X
D1	Mar 03, 2016		Soil	S16-Ma09106	X	X	X	
D2	Mar 03, 2016		Soil	S16-Ma09107	X	X	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							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls (PCB)							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	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							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	88			70-130	Pass	
TRH C10-C14	%	71			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	92			70-130	Pass	
Toluene	%	126			70-130	Pass	
Ethylbenzene	%	107			70-130	Pass	
m&p-Xylenes	%	111			70-130	Pass	
o-Xylene	%	108			70-130	Pass	
Xylenes - Total	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	96			70-130	Pass	
TRH C6-C10	%	98			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	83			70-130	Pass	
Acenaphthylene	%	76			70-130	Pass	
Anthracene	%	87			70-130	Pass	
Benz(a)anthracene	%	77			70-130	Pass	
Benzo(a)pyrene	%	75			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(b&j)fluoranthene	%	70			70-130	Pass	
Benzo(g,h,i)perylene	%	78			70-130	Pass	
Benzo(k)fluoranthene	%	80			70-130	Pass	
Chrysene	%	83			70-130	Pass	
Dibenz(a,h)anthracene	%	71			70-130	Pass	
Fluoranthene	%	79			70-130	Pass	
Fluorene	%	81			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	72			70-130	Pass	
Naphthalene	%	77			70-130	Pass	
Phenanthrene	%	79			70-130	Pass	
Pyrene	%	76			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	108			70-130	Pass	
4,4'-DDD	%	106			70-130	Pass	
4,4'-DDE	%	109			70-130	Pass	
4,4'-DDT	%	90			70-130	Pass	
a-BHC	%	101			70-130	Pass	
Aldrin	%	112			70-130	Pass	
b-BHC	%	99			70-130	Pass	
d-BHC	%	112			70-130	Pass	
Dieldrin	%	111			70-130	Pass	
Endosulfan I	%	110			70-130	Pass	
Endosulfan II	%	108			70-130	Pass	
Endosulfan sulphate	%	116			70-130	Pass	
Endrin	%	118			70-130	Pass	
Endrin aldehyde	%	108			70-130	Pass	
Endrin ketone	%	101			70-130	Pass	
g-BHC (Lindane)	%	102			70-130	Pass	
Heptachlor	%	119			70-130	Pass	
Heptachlor epoxide	%	108			70-130	Pass	
Hexachlorobenzene	%	97			70-130	Pass	
Methoxychlor	%	97			70-130	Pass	
Toxaphene	%	101			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls (PCB)							
Aroclor-1260	%	71			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	76			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	93			70-130	Pass	
Cadmium	%	97			70-130	Pass	
Chromium	%	92			70-130	Pass	
Copper	%	93			70-130	Pass	
Lead	%	92			70-130	Pass	
Mercury	%	99			70-130	Pass	
Nickel	%	95			70-130	Pass	
Zinc	%	101			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-Ma10626	NCP	%	94			70-130	Pass	
Acenaphthylene	S16-Ma10626	NCP	%	77			70-130	Pass	
Anthracene	S16-Ma10626	NCP	%	114			70-130	Pass	
Benz(a)anthracene	S16-Ma10626	NCP	%	96			70-130	Pass	
Benzo(a)pyrene	S16-Ma10626	NCP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Ma10626	NCP	%	73			70-130	Pass	
Benzo(g,h,i)perylene	S16-Ma10626	NCP	%	91			70-130	Pass	
Benzo(k)fluoranthene	S16-Ma10626	NCP	%	81			70-130	Pass	
Chrysene	S16-Ma10626	NCP	%	99			70-130	Pass	
Dibenz(a,h)anthracene	S16-Ma10626	NCP	%	78			70-130	Pass	
Fluoranthene	S16-Ma10626	NCP	%	106			70-130	Pass	
Fluorene	S16-Ma10626	NCP	%	92			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S16-Ma10626	NCP	%	84			70-130	Pass	
Naphthalene	S16-Ma10626	NCP	%	85			70-130	Pass	
Phenanthrene	S16-Ma10626	NCP	%	109			70-130	Pass	
Pyrene	S16-Ma10626	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S16-Ma13161	NCP	%	115			70-130	Pass	
4,4'-DDD	S16-Ma13161	NCP	%	120			70-130	Pass	
4,4'-DDE	S16-Ma13161	NCP	%	118			70-130	Pass	
4,4'-DDT	S16-Ma13161	NCP	%	93			70-130	Pass	
a-BHC	S16-Ma13161	NCP	%	92			70-130	Pass	
Aldrin	S16-Ma13161	NCP	%	110			70-130	Pass	
b-BHC	S16-Ma13161	NCP	%	92			70-130	Pass	
d-BHC	S16-Ma13161	NCP	%	108			70-130	Pass	
Dieldrin	S16-Ma13161	NCP	%	119			70-130	Pass	
Endosulfan I	S16-Ma13161	NCP	%	113			70-130	Pass	
Endosulfan II	S16-Ma13161	NCP	%	117			70-130	Pass	
Endosulfan sulphate	S16-Ma13161	NCP	%	119			70-130	Pass	
Endrin	S16-Ma13161	NCP	%	119			70-130	Pass	
Endrin aldehyde	S16-Ma13161	NCP	%	101			70-130	Pass	
Endrin ketone	S16-Ma13161	NCP	%	114			70-130	Pass	
g-BHC (Lindane)	S16-Ma13161	NCP	%	105			70-130	Pass	
Heptachlor	S16-Ma13161	NCP	%	96			70-130	Pass	
Heptachlor epoxide	S16-Ma13161	NCP	%	111			70-130	Pass	
Hexachlorobenzene	S16-Ma13161	NCP	%	90			70-130	Pass	
Methoxychlor	S16-Ma13161	NCP	%	120			70-130	Pass	
Toxaphene	S16-Ma10738	NCP	%	118			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls (PCB)				Result 1					
Aroclor-1260	S16-Ma14043	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S16-Ma09078	CP	%	123			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-Ma09078	CP	%	91			70-130	Pass	
Toluene	S16-Ma09078	CP	%	116			70-130	Pass	
Ethylbenzene	S16-Ma09078	CP	%	100			70-130	Pass	
m&p-Xylenes	S16-Ma09078	CP	%	104			70-130	Pass	
o-Xylene	S16-Ma09078	CP	%	101			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	S16-Ma09078	CP	%	103		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	S16-Ma09078	CP	%	87		70-130	Pass	
TRH C6-C10	S16-Ma09078	CP	%	98		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S16-Ma09080	CP	%	97		70-130	Pass	
Cadmium	S16-Ma09080	CP	%	101		70-130	Pass	
Chromium	S16-Ma09080	CP	%	113		70-130	Pass	
Mercury	S16-Ma09080	CP	%	110		70-130	Pass	
Nickel	S16-Ma09080	CP	%	98		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	S16-Ma09081	CP	%	85		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	S16-Ma09081	CP	%	86		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	S16-Ma09088	CP	%	87		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	S16-Ma09088	CP	%	108		70-130	Pass	
Toluene	S16-Ma09088	CP	%	95		70-130	Pass	
Ethylbenzene	S16-Ma09088	CP	%	83		70-130	Pass	
m&p-Xylenes	S16-Ma09088	CP	%	86		70-130	Pass	
o-Xylene	S16-Ma09088	CP	%	85		70-130	Pass	
Xylenes - Total	S16-Ma09088	CP	%	86		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	S16-Ma09088	CP	%	71		70-130	Pass	
TRH C6-C10	S16-Ma09088	CP	%	93		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S16-Ma09090	CP	%	107		70-130	Pass	
Cadmium	S16-Ma09090	CP	%	89		70-130	Pass	
Chromium	S16-Ma09090	CP	%	87		70-130	Pass	
Copper	S16-Ma09090	CP	%	73		70-130	Pass	
Lead	S16-Ma09090	CP	%	92		70-130	Pass	
Mercury	S16-Ma09090	CP	%	98		70-130	Pass	
Nickel	S16-Ma09090	CP	%	86		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	S16-Ma09091	CP	%	79		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	S16-Ma09091	CP	%	72		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	S16-Ma09098	CP	%	82		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	S16-Ma09098	CP	%	96		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Toluene	S16-Ma09098	CP	%	82			70-130	Pass	
Ethylbenzene	S16-Ma09098	CP	%	86			70-130	Pass	
m&p-Xylenes	S16-Ma09098	CP	%	78			70-130	Pass	
o-Xylene	S16-Ma09098	CP	%	83			70-130	Pass	
Xylenes - Total	S16-Ma09098	CP	%	80			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S16-Ma09098	CP	%	80			70-130	Pass	
TRH C6-C10	S16-Ma09098	CP	%	80			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-Ma09100	CP	%	76			70-130	Pass	
Cadmium	S16-Ma09100	CP	%	76			70-130	Pass	
Chromium	S16-Ma09100	CP	%	73			70-130	Pass	
Copper	S16-Ma09100	CP	%	87			70-130	Pass	
Mercury	S16-Ma09100	CP	%	73			70-130	Pass	
Nickel	S16-Ma09100	CP	%	71			70-130	Pass	
Zinc	S16-Ma09100	CP	%	103			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S16-Ma09101	CP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S16-Ma09101	CP	%	99			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	S16-Ma09077	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-Ma09077	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-Ma09077	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-Ma09077	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-Ma09077	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-Ma09077	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-Ma09077	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S16-Ma09077	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-Ma09077	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-Ma09078	CP	%	6.2	6.5	5.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Ma09079	CP	mg/kg	18	23	24	30%	Pass	
Cadmium	S16-Ma09079	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Ma09079	CP	mg/kg	20	11	61	30%	Fail	Q15
Copper	S16-Ma09079	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S16-Ma09079	CP	mg/kg	10	11	9.0	30%	Pass	
Mercury	S16-Ma09079	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-Ma09079	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S16-Ma09079	CP	mg/kg	< 5	< 5	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	S16-Ma09080	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S16-Ma09080	CP	mg/kg	160	130	22	30%	Pass
TRH C29-C36	S16-Ma09080	CP	mg/kg	110	86	28	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	S16-Ma09080	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S16-Ma09080	CP	mg/kg	270	210	23	30%	Pass
TRH >C34-C40	S16-Ma09080	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S16-Ma09082	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S16-Ma09082	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S16-Ma09082	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Toxaphene	S16-Ma09082	CP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD		
Aroclor-1016	S16-Ma09082	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1232	S16-Ma09082	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S16-Ma09082	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S16-Ma09082	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S16-Ma09082	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S16-Ma09082	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S16-Ma09087	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S16-Ma09087	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S16-Ma09087	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S16-Ma09087	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S16-Ma09087	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S16-Ma09087	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S16-Ma09087	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S16-Ma09087	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S16-Ma09087	CP	mg/kg	< 20	< 20	<1	30%	Pass

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S16-Ma09088	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S16-Ma09088	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S16-Ma09088	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Toxaphene	S16-Ma09088	CP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD		
Aroclor-1016	S16-Ma09088	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1232	S16-Ma09088	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S16-Ma09088	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S16-Ma09088	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S16-Ma09088	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S16-Ma09088	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S16-Ma09088	CP	%	23	22	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S16-Ma09089	CP	mg/kg	2.8	3.3	15	30%	Pass
Cadmium	S16-Ma09089	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S16-Ma09089	CP	mg/kg	5.3	5.9	10	30%	Pass
Copper	S16-Ma09089	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S16-Ma09089	CP	mg/kg	12	12	<1	30%	Pass
Mercury	S16-Ma09089	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S16-Ma09089	CP	mg/kg	< 5	< 5	<1	30%	Pass
Zinc	S16-Ma09089	CP	mg/kg	< 5	< 5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	S16-Ma09090	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S16-Ma09090	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S16-Ma09090	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	S16-Ma09090	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S16-Ma09090	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S16-Ma09090	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S16-Ma09097	CP	mg/kg	< 20	< 20	<1	30%	Pass

Duplicate								
BTX				Result 1	Result 2	RPD		
Benzene	S16-Ma09097	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S16-Ma09097	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S16-Ma09097	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S16-Ma09097	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S16-Ma09097	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S16-Ma09097	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S16-Ma09097	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S16-Ma09097	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S16-Ma09098	CP	%	20	18	11	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S16-Ma09099	CP	mg/kg	6.6	6.5	1.0	30%	Pass
Cadmium	S16-Ma09099	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S16-Ma09099	CP	mg/kg	8.2	9.3	12	30%	Pass
Copper	S16-Ma09099	CP	mg/kg	15	13	11	30%	Pass
Lead	S16-Ma09099	CP	mg/kg	49	36	32	30%	Fail
Mercury	S16-Ma09099	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S16-Ma09099	CP	mg/kg	< 5	< 5	<1	30%	Pass
Zinc	S16-Ma09099	CP	mg/kg	9.4	13	29	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	S16-Ma09100	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S16-Ma09100	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S16-Ma09100	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S16-Ma09100	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S16-Ma09100	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S16-Ma09100	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Toxaphene	S16-Ma09100	CP	mg/kg	< 1	< 1	<1	30%	Pass

Duplicate								
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD		
Aroclor-1016	S16-Ma09100	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1232	S16-Ma09100	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S16-Ma09100	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S16-Ma09100	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S16-Ma09100	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S16-Ma09100	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	S16-Ma09100	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S16-Ma09100	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S16-Ma09100	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S16-Ma09107	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S16-Ma09107	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S16-Ma09107	CP	mg/kg	1.6	0.8	66	30%	Fail Q15
Benz(a)anthracene	S16-Ma09107	CP	mg/kg	1.4	0.9	50	30%	Fail Q15
Benzo(a)pyrene	S16-Ma09107	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S16-Ma09107	CP	mg/kg	0.9	0.8	18	30%	Pass Q15
Benzo(g,h,i)perylene	S16-Ma09107	CP	mg/kg	0.9	0.6	33	30%	Fail Q15
Benzo(k)fluoranthene	S16-Ma09107	CP	mg/kg	1.4	0.8	59	30%	Fail Q15
Chrysene	S16-Ma09107	CP	mg/kg	1.4	0.9	46	30%	Fail Q15
Dibenz(a,h)anthracene	S16-Ma09107	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S16-Ma09107	CP	mg/kg	3.1	1.7	56	30%	Fail Q15
Fluorene	S16-Ma09107	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S16-Ma09107	CP	mg/kg	0.7	< 0.5	41	30%	Fail Q15
Naphthalene	S16-Ma09107	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S16-Ma09107	CP	mg/kg	1.6	0.8	66	30%	Fail Q15
Pyrene	S16-Ma09107	CP	mg/kg	2.8	1.5	57	30%	Fail Q15

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

Andrew Black	Analytical Services Manager
Bob Symons	Senior Analyst-Inorganic (NSW)
Ivan Taylor	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)



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

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CERTIFICATE OF ANALYSIS

143059

Client:

Benviron Group
PO Box 4405
East Gosford
NSW 2250

Attention: Ben Buckley

Sample log in details:

Your Reference:	<u>E795, Lewisham</u>
No. of samples:	2 Soils
Date samples received / completed instructions received	09/03/16 / 09/03/16

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:	16/03/16 / 14/03/16
Date of Preliminary Report:	Not Issued

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Results Approved By:


Jacinta Hurst
Laboratory Manager

Envirolab Reference: 143059
Revision No: R 00



vTRH(C6-C10)/BTEXN in Soil			
Our Reference:	UNITS	143059-1	143059-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	03/03/2016	04/03/2016
Type of sample		Soil	Soil
Date extracted	-	11/03/2016	11/03/2016
Date analysed	-	11/03/2016	11/03/2016
TRHC ₆ - C ₉	mg/kg	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25
VTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	90	91

svTRH (C10-C40) in Soil			
Our Reference:	UNITS	143059-1	143059-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	03/03/2016	04/03/2016
Type of sample		Soil	Soil
Date extracted	-	11/03/2016	11/03/2016
Date analysed	-	11/03/2016	12/03/2016
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100
Surrogate o-Terphenyl	%	83	82

PAHs in Soil			
Our Reference:	UNITS	143059-1	143059-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	03/03/2016	04/03/2016
Type of sample		Soil	Soil
Date extracted	-	11/03/2016	11/03/2016
Date analysed	-	14/03/2016	14/03/2016
Naphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.3	0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	0.2	<0.1
Phenanthrene	mg/kg	3.3	1.2
Anthracene	mg/kg	0.7	0.3
Fluoranthene	mg/kg	5.3	2.3
Pyrene	mg/kg	4.9	2.2
Benzo(a)anthracene	mg/kg	2.5	1.2
Chrysene	mg/kg	2.5	1.3
Benzo(b,j+k)fluoranthene	mg/kg	3.4	2
Benzo(a)pyrene	mg/kg	2.1	1.0
Indeno(1,2,3-c,d)pyrene	mg/kg	1.1	0.6
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	1	0.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	2.9	1.4
Benzo(a)pyrene TEQ calc(half)	mg/kg	2.9	1.4
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	2.9	1.5
Total Positive PAHs	mg/kg	28	12
Surrogate p-Terphenyl-d14	%	110	103

Organochlorine Pesticides in soil			
Our Reference:	UNITS	143059-1	143059-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	03/03/2016	04/03/2016
Type of sample		Soil	Soil
Date extracted	-	11/03/2016	11/03/2016
Date analysed	-	12/03/2016	12/03/2016
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Surrogate TCMX	%	97	100

PCBs in Soil			
Our Reference:	UNITS	143059-1	143059-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	03/03/2016	04/03/2016
Type of sample		Soil	Soil
Date extracted	-	11/03/2016	11/03/2016
Date analysed	-	12/03/2016	12/03/2016
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	97	100

Acid Extractable metals in soil				
Our Reference:	UNITS	143059-1	143059-2	143059-3
Your Reference	-----	SS1	SS2	SS1 -
	-			TRIPLICATE
Date Sampled	-----	03/03/2016	04/03/2016	03/03/2016
Type of sample		Soil	Soil	Soil
Date prepared	-	11/03/2016	11/03/2016	11/03/2016
Date analysed	-	11/03/2016	11/03/2016	11/03/2016
Arsenic	mg/kg	8	9	8
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	21	20	20
Copper	mg/kg	390	49	63
Lead	mg/kg	350	500	460
Mercury	mg/kg	0.3	0.3	0.3
Nickel	mg/kg	13	10	14
Zinc	mg/kg	260	190	250

Moisture			
Our Reference:	UNITS	143059-1	143059-2
Your Reference	-----	SS1	SS2
	-		
Date Sampled	-----	03/03/2016	04/03/2016
Type of sample		Soil	Soil
Date prepared	-	11/03/2016	11/03/2016
Date analysed	-	14/03/2016	14/03/2016
Moisture	%	21	20

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.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

Client Reference: E795, Lewisham

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
Date analysed	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	143059-1	<25 <25	LCS-2	99%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	143059-1	<25 <25	LCS-2	99%
Benzene	mg/kg	0.2	Org-016	<0.2	143059-1	<0.2 <0.2	LCS-2	97%
Toluene	mg/kg	0.5	Org-016	<0.5	143059-1	<0.5 <0.5	LCS-2	86%
Ethylbenzene	mg/kg	1	Org-016	<1	143059-1	<1 <1	LCS-2	99%
m+p-xylene	mg/kg	2	Org-016	<2	143059-1	<2 <2	LCS-2	107%
o-Xylene	mg/kg	1	Org-016	<1	143059-1	<1 <1	LCS-2	100%
naphthalene	mg/kg	1	Org-014	<1	143059-1	<1 <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	97	143059-1	90 89 RPD: 1	LCS-2	97%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
Date analysed	-			11/03/2016	143059-1	11/03/2016 12/03/2016	LCS-2	11/03/2016
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	143059-1	<50 <50	LCS-2	102%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	143059-1	<100 <100	LCS-2	101%
TRHC ₂₈ - C ₃₆	mg/kg	100	Org-003	<100	143059-1	<100 <100	LCS-2	95%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	143059-1	<50 <50	LCS-2	102%
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	143059-1	<100 <100	LCS-2	101%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	143059-1	<100 <100	LCS-2	95%
Surrogate o-Terphenyl	%		Org-003	85	143059-1	83 82 RPD: 1	LCS-2	94%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
Date analysed	-			14/03/2016	143059-1	14/03/2016 14/03/2016	LCS-2	14/03/2016
Naphthalene	mg/kg	0.1	Org-012	<0.1	143059-1	0.1 <0.1	LCS-2	110%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	143059-1	0.3 0.1 RPD: 100	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	143059-1	0.2 0.1 RPD: 67	LCS-2	107%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	143059-1	3.3 2.3 RPD: 36	LCS-2	106%
Anthracene	mg/kg	0.1	Org-012	<0.1	143059-1	0.7 0.6 RPD: 15	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	143059-1	5.3 4.0 RPD: 28	LCS-2	111%
Pyrene	mg/kg	0.1	Org-012	<0.1	143059-1	4.9 3.7 RPD: 28	LCS-2	118%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	143059-1	2.5 2.2 RPD: 13	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	143059-1	2.5 2.0 RPD: 22	LCS-2	115%
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	143059-1	3.4 2.9 RPD: 16	[NR]	[NR]

Client Reference: E795, Lewisham

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	143059-1	2.1 1.7 RPD: 21	LCS-2	117%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	143059-1	1.1 0.9 RPD: 20	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	143059-1	0.1 0.1 RPD: 0	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	143059-1	1 0.8 RPD: 22	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	108	143059-1	110 105 RPD: 5	LCS-2	109%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base II Duplicate II %RPD		
Date extracted	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
Date analysed	-			12/03/2016	143059-1	12/03/2016 12/03/2016	LCS-2	12/03/2016
HCB	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	91%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	92%
Heptachlor	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	112%
delta-BHC	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	102%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	99%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	100%
Dieldrin	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	101%
Endrin	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	107%
pp-DDD	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	97%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	LCS-2	90%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	99	143059-1	97 94 RPD: 3	LCS-2	113%

Client Reference: E795, Lewisham

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
Date analysed	-			12/03/2016	143059-1	12/03/2016 12/03/2016	LCS-2	12/03/2016
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	143059-1	<0.1 <0.1	LCS-2	99%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	143059-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	99	143059-1	97 94 RPD: 3	LCS-2	95%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date prepared	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
Date analysed	-			11/03/2016	143059-1	11/03/2016 11/03/2016	LCS-2	11/03/2016
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	143059-1	8 9 RPD: 12	LCS-2	106%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	143059-1	<0.4 <0.4	LCS-2	101%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	143059-1	21 21 RPD: 0	LCS-2	104%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	143059-1	390 51 RPD: 154	LCS-2	105%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	143059-1	350 310 RPD: 12	LCS-2	102%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	143059-1	0.3 0.3 RPD: 0	LCS-2	90%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	143059-1	13 12 RPD: 8	LCS-2	100%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	143059-1	260 220 RPD: 17	LCS-2	101%

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 143059-1 for Cu. Therefore a triplicate result has been issued as laboratory sample number 143059-3.

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 batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

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

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 D PROPOSED DEVELOPMENT PLANS

PROPOSED DEVELOPMENT

SITE A

PROPOSED ZONING: B5
MAXIMUM PROPOSED HEIGHT: 16.5m
PROPOSED FSR: 1.96/1

SITE B

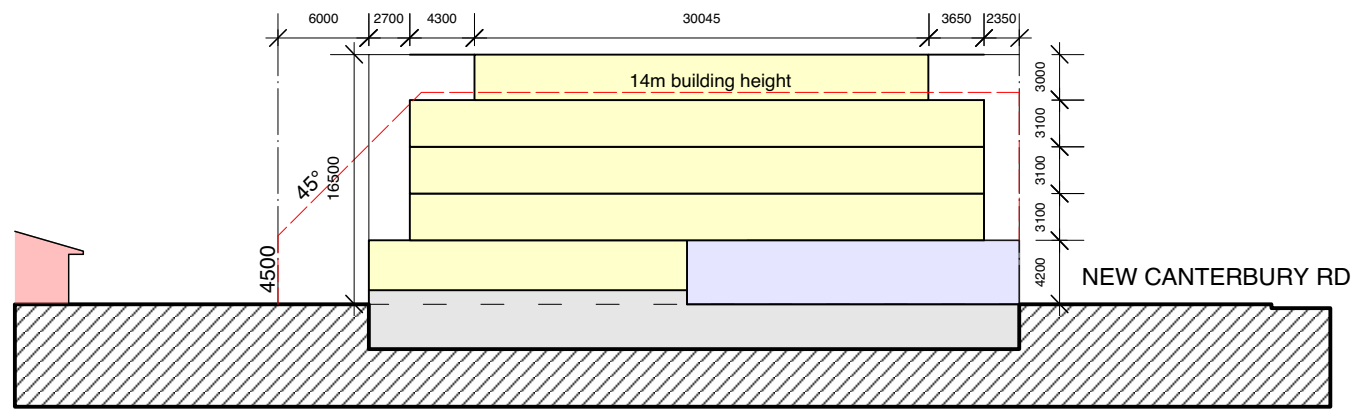
PROPOSED ZONING: R4
MAXIMUM PROPOSED HEIGHT: 16.8m
PROPOSED FSR: 2.1/1



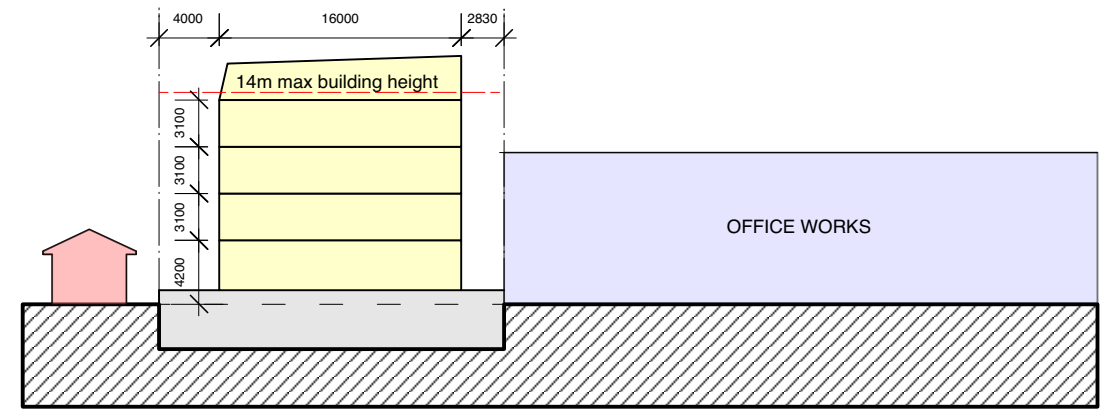
1 PROPOSED DEVELOPMENT
1:1000



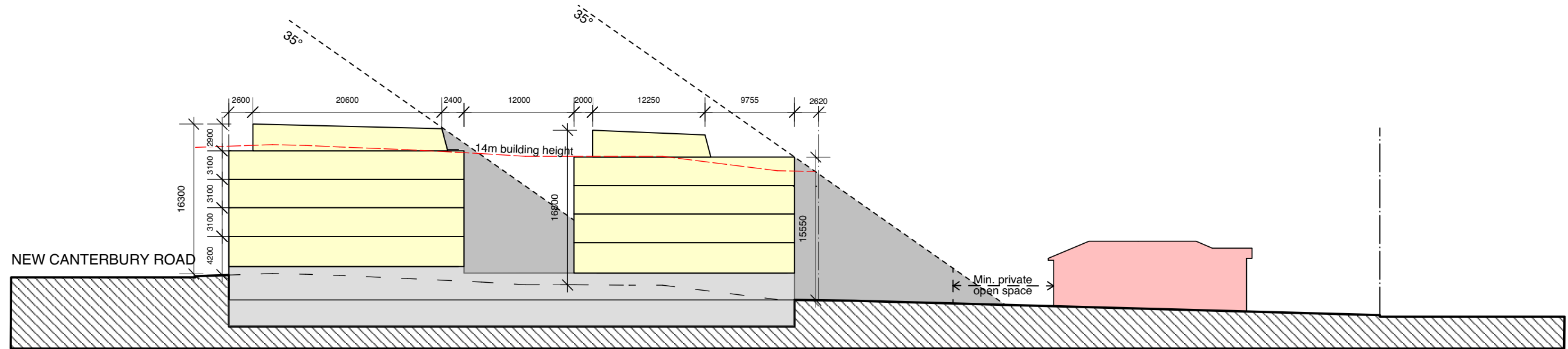
Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By	VG	Dwg Date:	September 1	Project No.	1522
Client	ILLUMINATE LIVING PTY LTD	Checked By		Scale	1:1000@A	Drawing No.	A101
Title	PROPOSED DEVELOPMENT					Rev	A



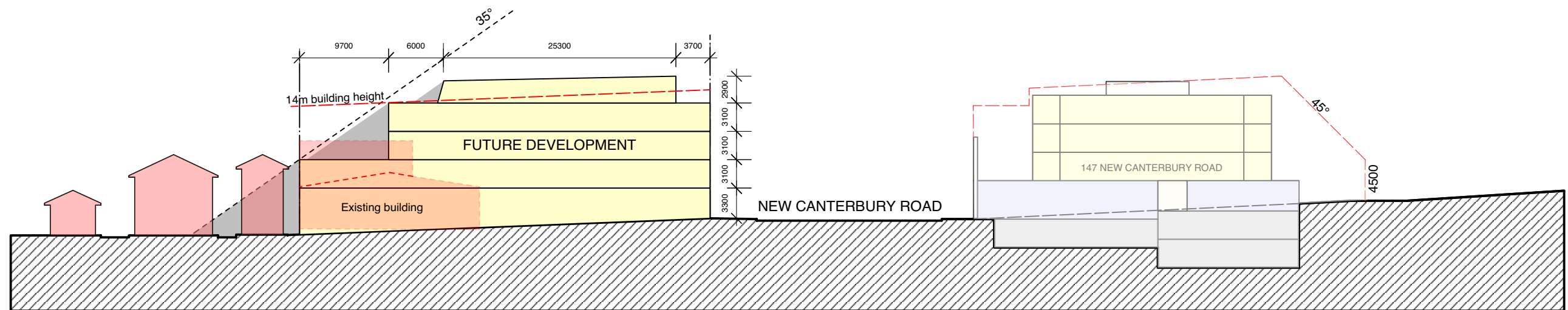
SECTION A



SECTION B

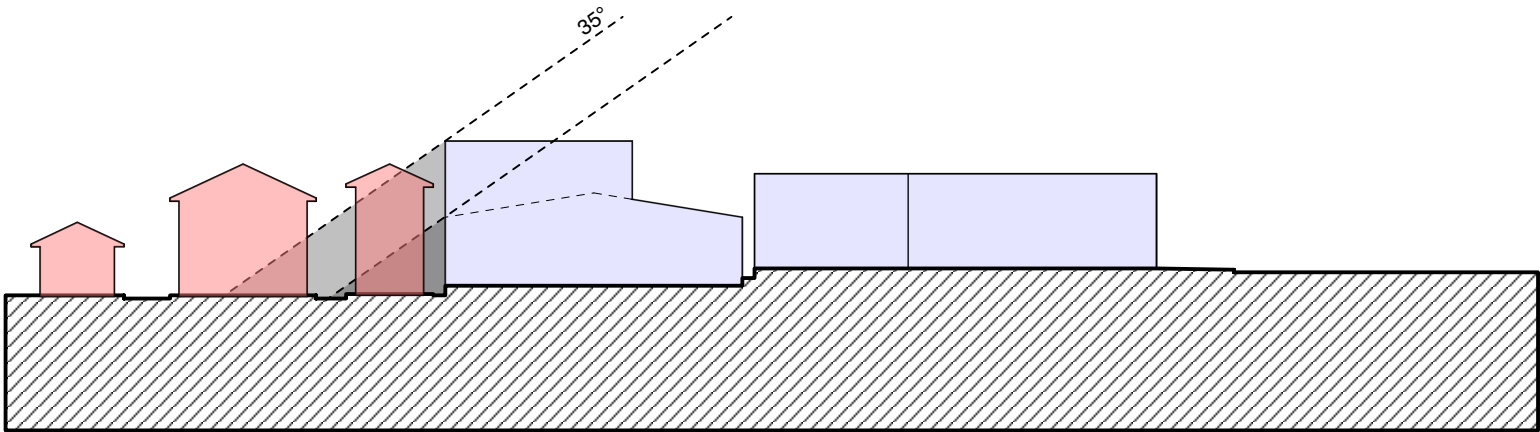


SECTION C

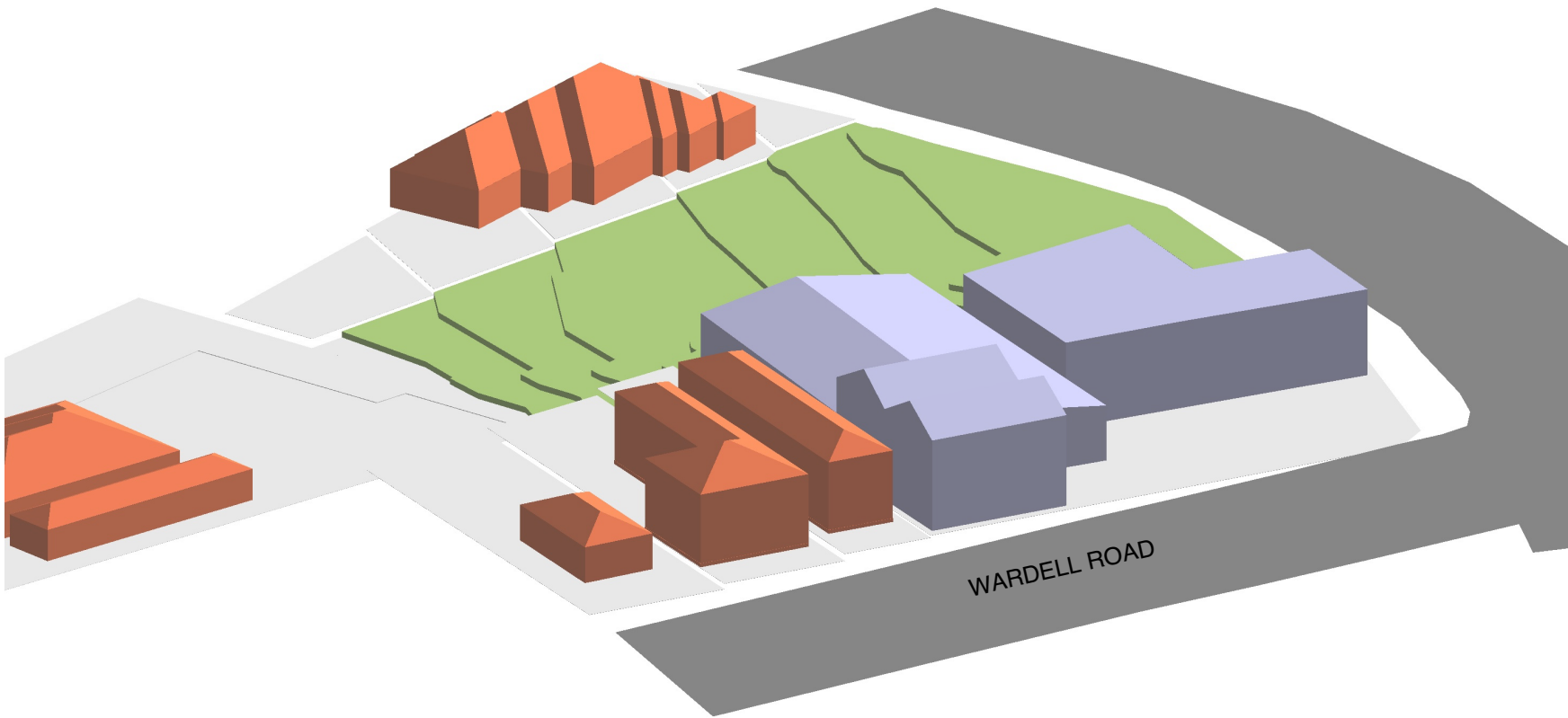


SECTION D

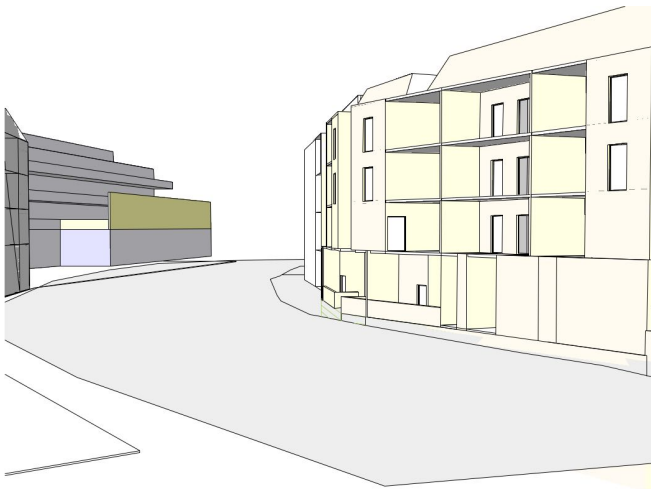
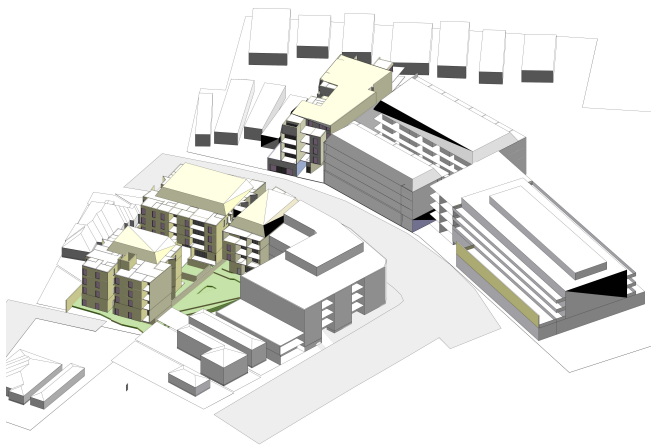




SECTION D-D
EXISTING SHADOWS ON WARDELL RD



Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: March 15	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:500@A3	Drawing No. Rev
Title	SITE SECTIONS (EXISTING)			A103 A



APARTMENT MIX

57 UNITS INCLUDING:
- 10 x 1 BEDROOM UNITS OR 17%
- 42 x 2 BEDROOM UNITS OR 74%
- 5 x 3 BEDROOM UNITS OR 9%

ADAPTABLE DWELLINGS

20% OF DWELLINGS: 12 UNITS

CAR PARKING SPACES (AREA 2)

1 BEDROOM: 4 x 0.5 = 3.5
2 BEDROOMS: 36 x 1 = 36
3 BEDROOMS: 5 x 1.2 = 6
VISITORS: 45 x 0.1 = 4.5
SUB-TOTAL: 50 SPACES

ACCESSIBLE: 12 x 1 = 12
VISITORS: 12 x 0.25 = 3
SUB-TOTAL: 15 DISABLED SPACES

TOTAL: 65 CAR PARKING SPACES ARE REQUIRED
PROPOSED: 65 CAR PARKING SPACES INCLUDING 14
DISABLED SPACES

FLOOR SPACE RATIO

SITE AREA: 2320m²
PROPOSED GROSS FLOOR AREA:

RESIDENTIAL: 4500m²
CIRCULATION: 355m²
TOTAL: 4855m²

FSR: 2.09/1

CROSS VENTILATION

48/58 UNITS ARE CROSS VENTILATED
THEREFORE 82% ARE CROSS VENTILATED

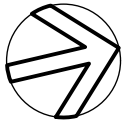
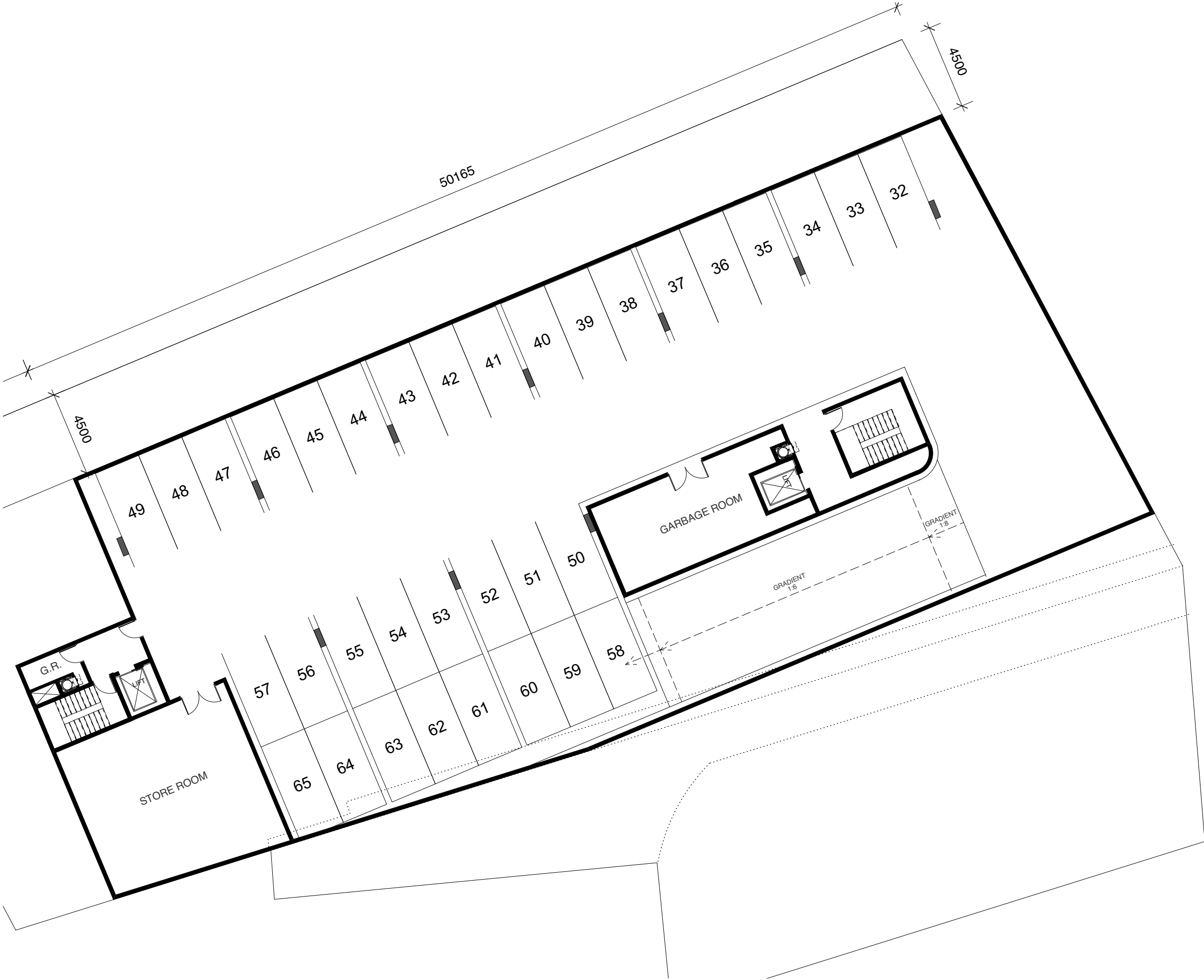
ACCESS TO SUNLIGHT

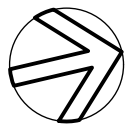
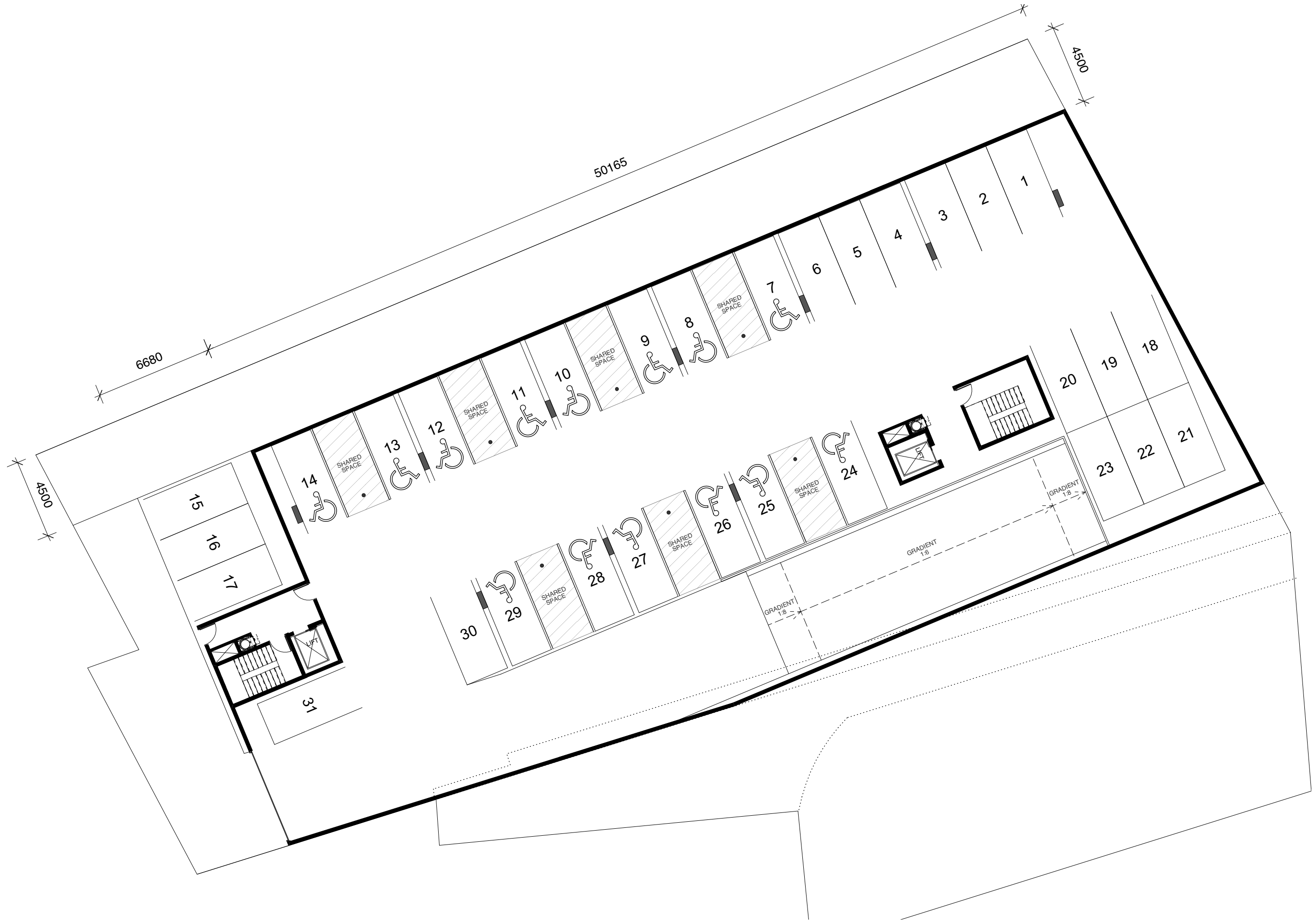
48/58 HAVE ACCESS TO SUNLIGHT FOR AT LEAST 2
HOURS DURING THE WINTER SOLSTICE,
THEREFORE 82% HAVE ACCESS TO SUNLIGHT

8/58 APARTMENTS DO NOT HAVE ACCESS TO
SUNLIGHT, OR 13%.

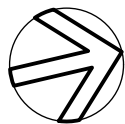
LANDSCAPING

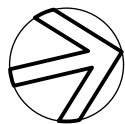
THERE IS 623m2 OF LANDSCAPING, OR 27% OF
THE SITE AREA, OUT OF WHICH 309m² OF GROUND
FLOOR PRIVATE AND COMMUNAL OPEN SPACE IS A
DEEP ROOT PLANTED AREA,
THEREFORE 13% OF THE SITE AREA CAN BE USED
FOR DEEP ROOT PLANTING.





Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A106 A
Title	Basement			

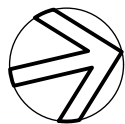




Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A108 A
Title	Level 1			



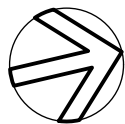
A	Issued for review	AB	03.06.115
Revision	Amendment	By	Date



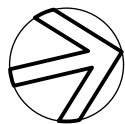
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Camperdown NSW 2050
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f 02 9557 2287
www.archb.com.au

Project	Planning Approval	Drawn By	Dwg Date:	Project No.
	183 & 218 New Canterbury Rd	VG	JAN 16	1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale	Drawing No. Rev
Title	Level 2		1:200@A3	A109 A



Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A110 A
Title	Level 3			



Project	Planning Approval	Drawn By	Dwg Date:	Project No.
	183 & 218 New Canterbury Rd	VG	JAN 16	1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale	Drawing No. Rev
Title	Level 4		1:200@A3	A111 A

APARTMENT MIX

25 UNITS, INCLUDING:
- 8 x 1 BEDROOM UNITS OR 32%
- 15 x 2 BEDROOM UNITS OR 60%
- 2 x 3 BEDROOM UNITS OR 8%

ADAPTABLE DWELLINGS

20% OF DWELLINGS: 5 UNITS

CAR PARKING SPACES (AREA 2)

COMMERCIAL: 1 PER 80m² THEREFORE 2 SPACES

1 BEDROOM: 8 x 0.5 = 4
2BEDROOMS: 10 x 1 = 10
3BEDROOMS: 2 x 1.2 = 2.4
VISITORS: 25 x 0.1 = 2.5
SUB-TOTAL: 18.9 OR 19 SPACES

ACCESSIBLE: 5 x 1 = 5
VISITORS: 5 x 0.25 = 1.25
SUB-TOTAL: 6.25 OR 6 DISABLED SPACES

REQUIRED: 27 CARPARKING SPACES
PROPOSED: 21 INCLUDING 6 DISABLED

FLOOR SPACE RATIO

SITE AREA: 1110m²
PROPOSED GROSS FLOOR AREA:

RESIDENTIAL: 1899m²
COMMERCIAL: 180m²
CIRCULATION: 104m²
TOTAL: 2183m²

FSR: 1.96/1

CROSS VENTILATION

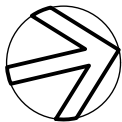
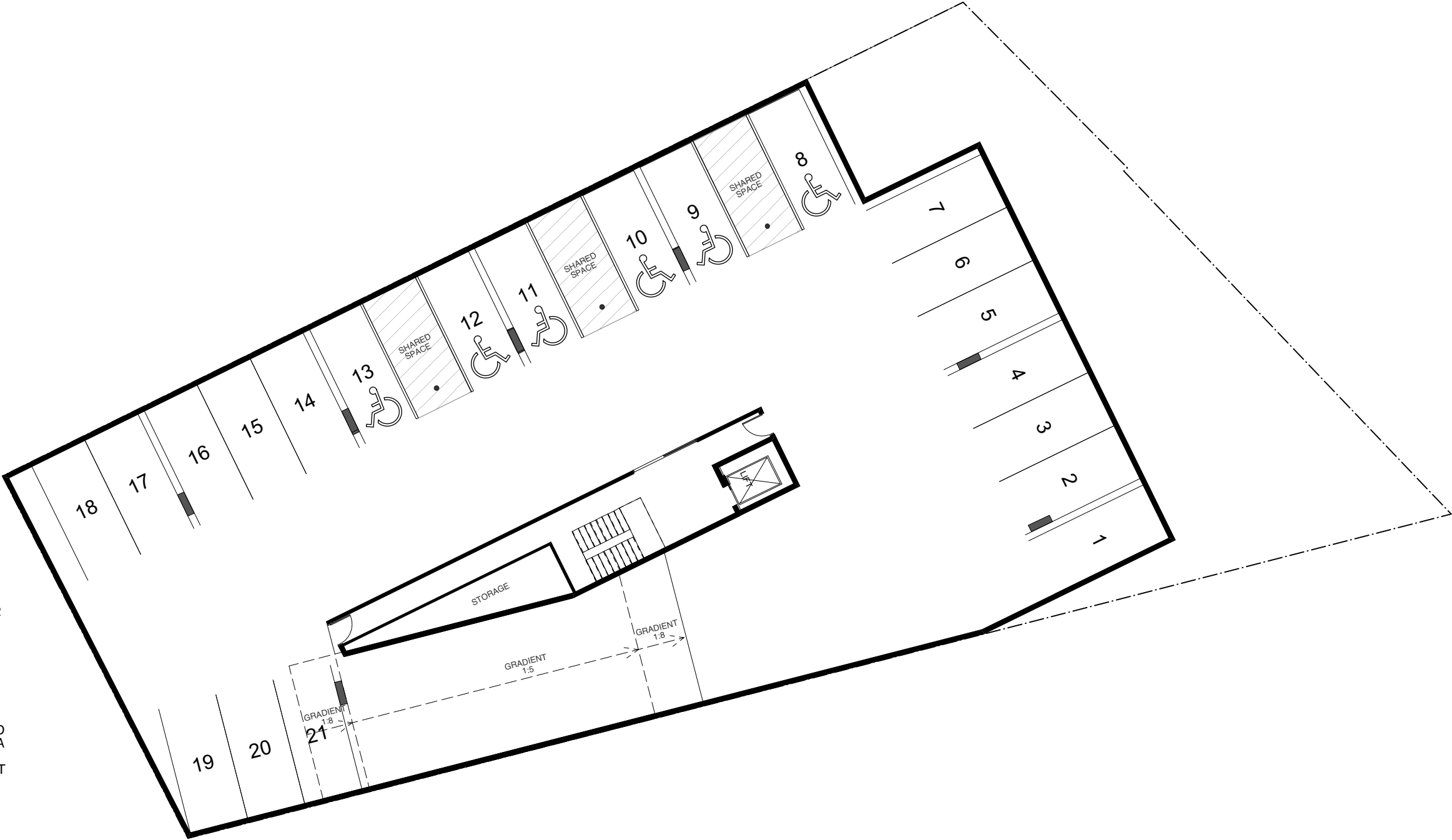
18/25 UNITS ARE CROSS VENTILATED
THEREFORE 72% ARE CROSS VENTILATED

ACCESS TO SUNLIGHT

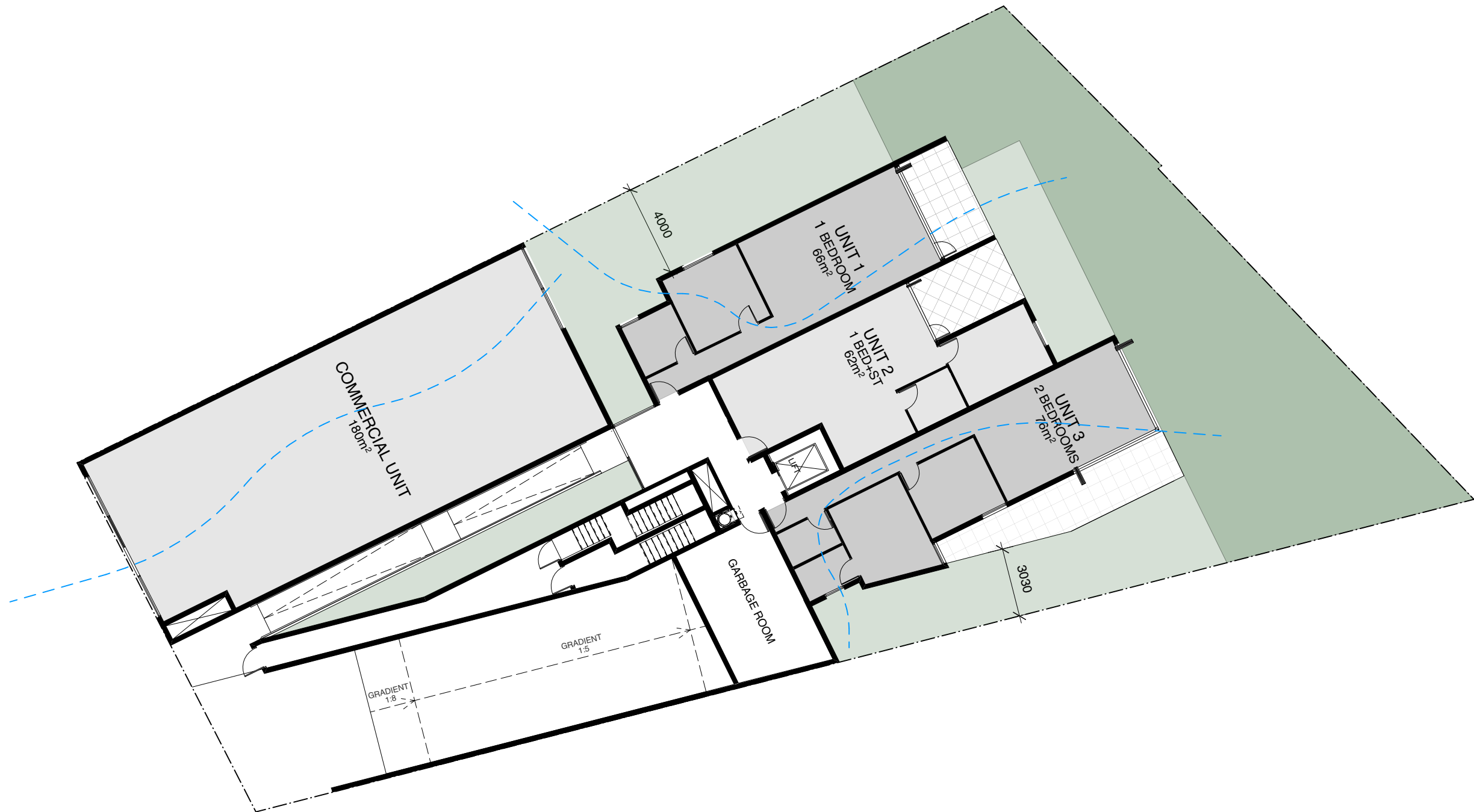
18/25 HAVE ACCESS TO SUNLIGHT FOR AT LEAST 2 HOURS DURING THE WINTER SOLSTICE,
THEREFORE 72% HAVE ACCESS TO SUNLIGHT

LANDSCAPING

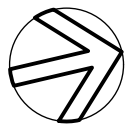
THERE IS 377m2 OF LANDSCAPING, OR 34% OF THE SITE AREA, OUT OF WHICH 200m² OF GROUND FLOOR PRIVATE AND COMMUNAL OPEN SPACE IS A DEEP ROOT PLANTED AREA,
THEREFORE 18% OF THE SITE AREA IS DEEP ROOT PLANTING.



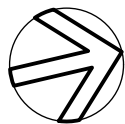
Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A112 A
Title	183 Basement			



Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A113 A
Title	183 Ground floor			



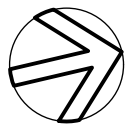
Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A114 A
Title	183 Level 1			



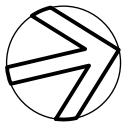
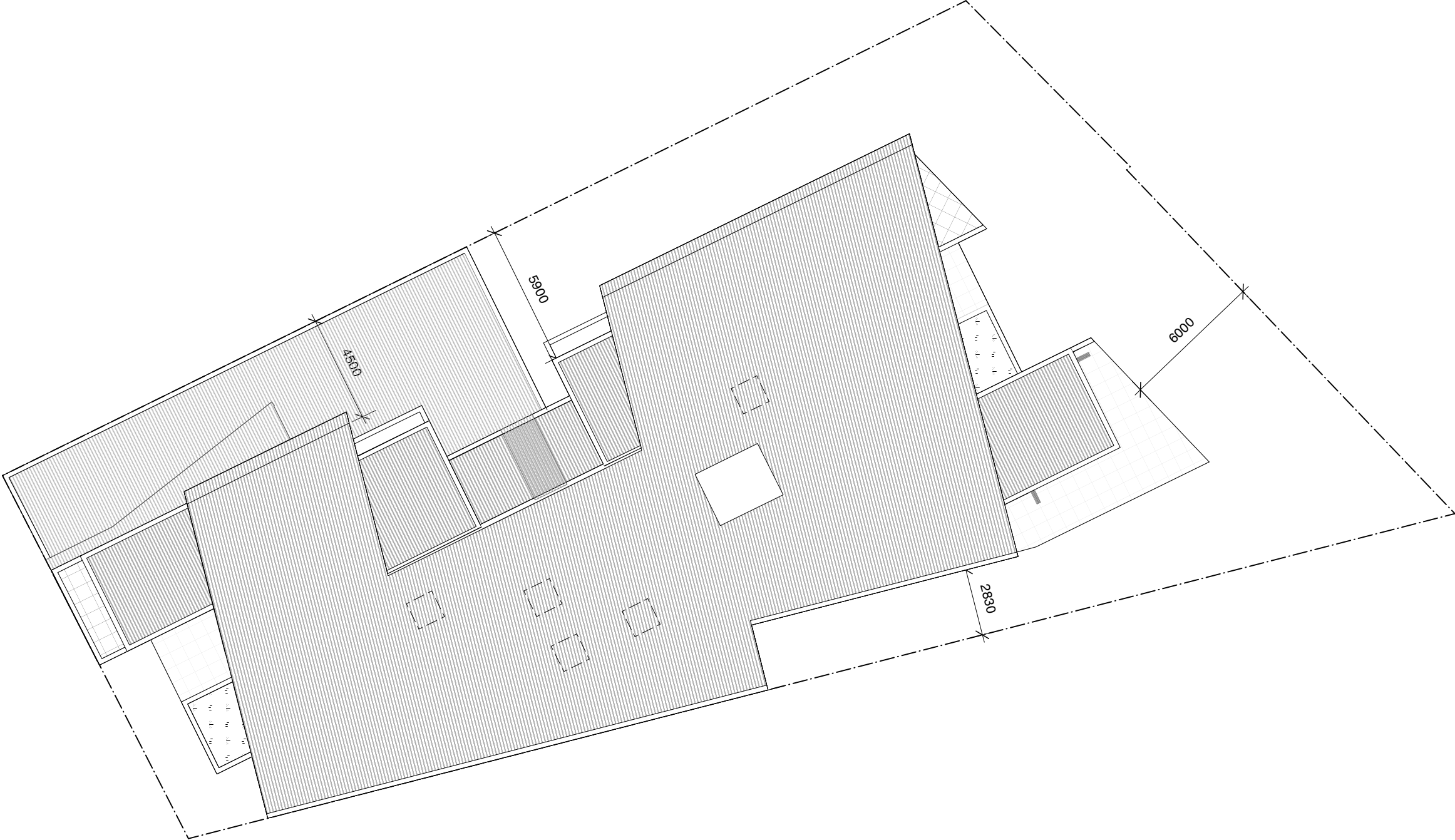
Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A115 A
Title	183 Level 2			



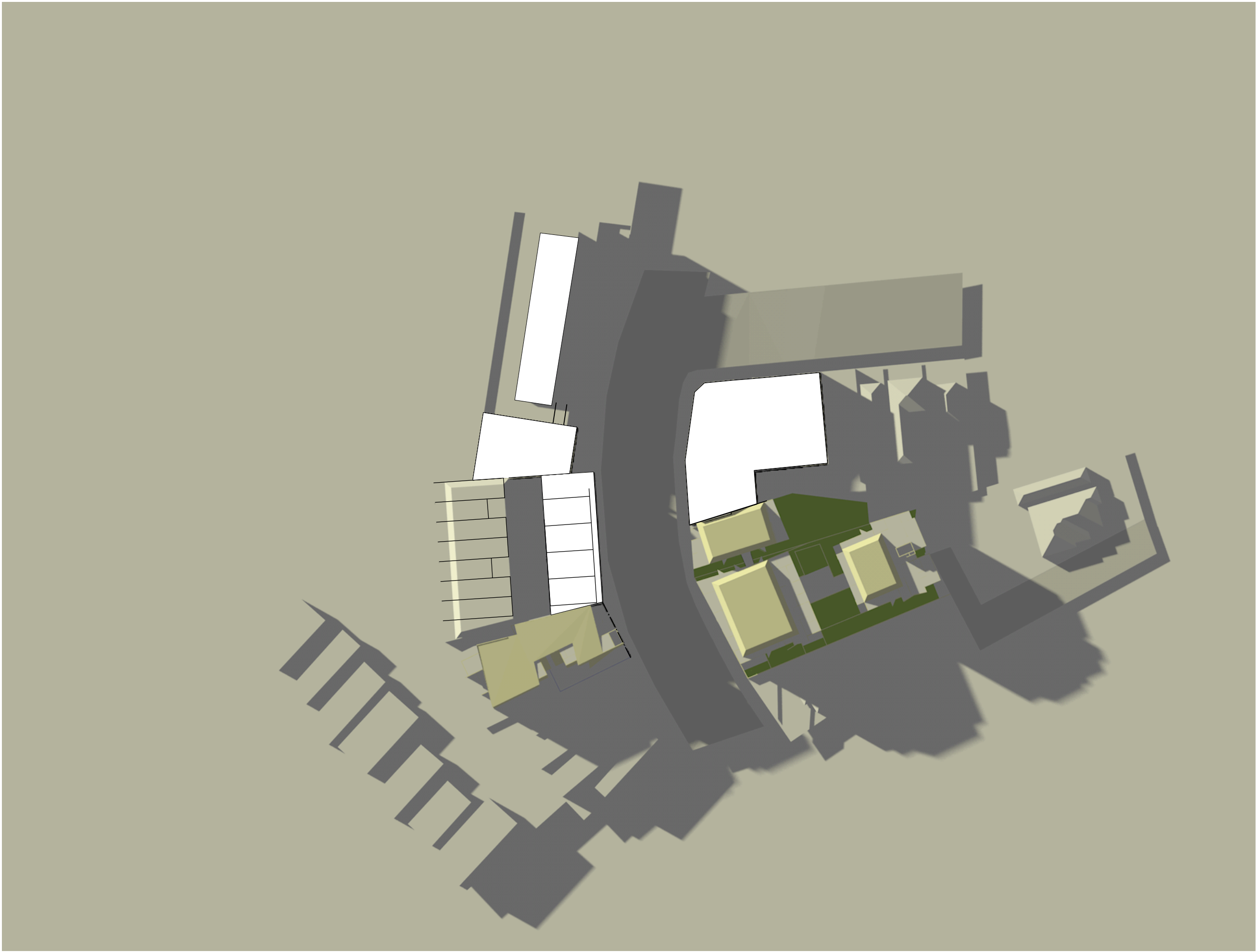
Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A116 A
Title	183 Level 3			



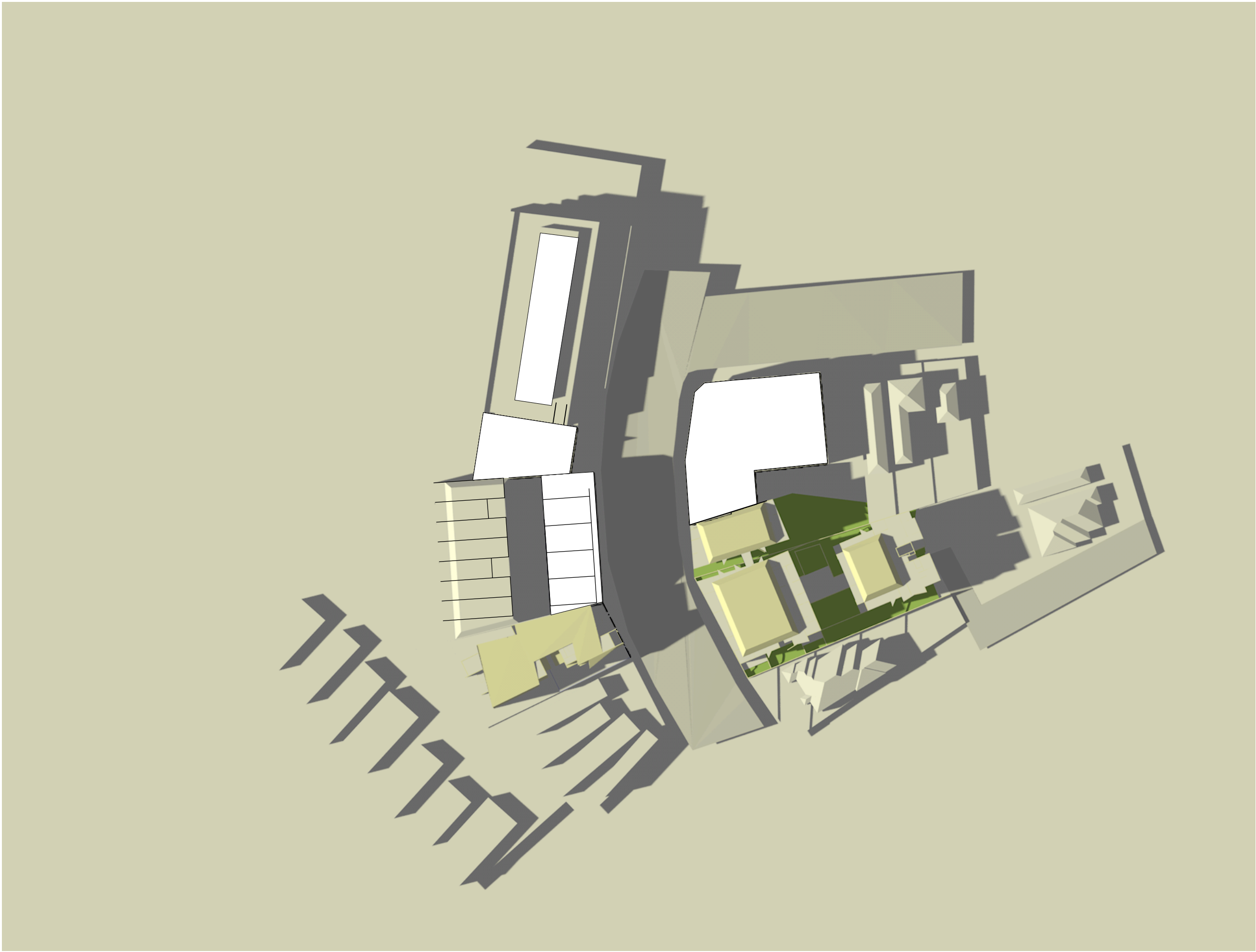
Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A117 A
Title	183 Level 4			

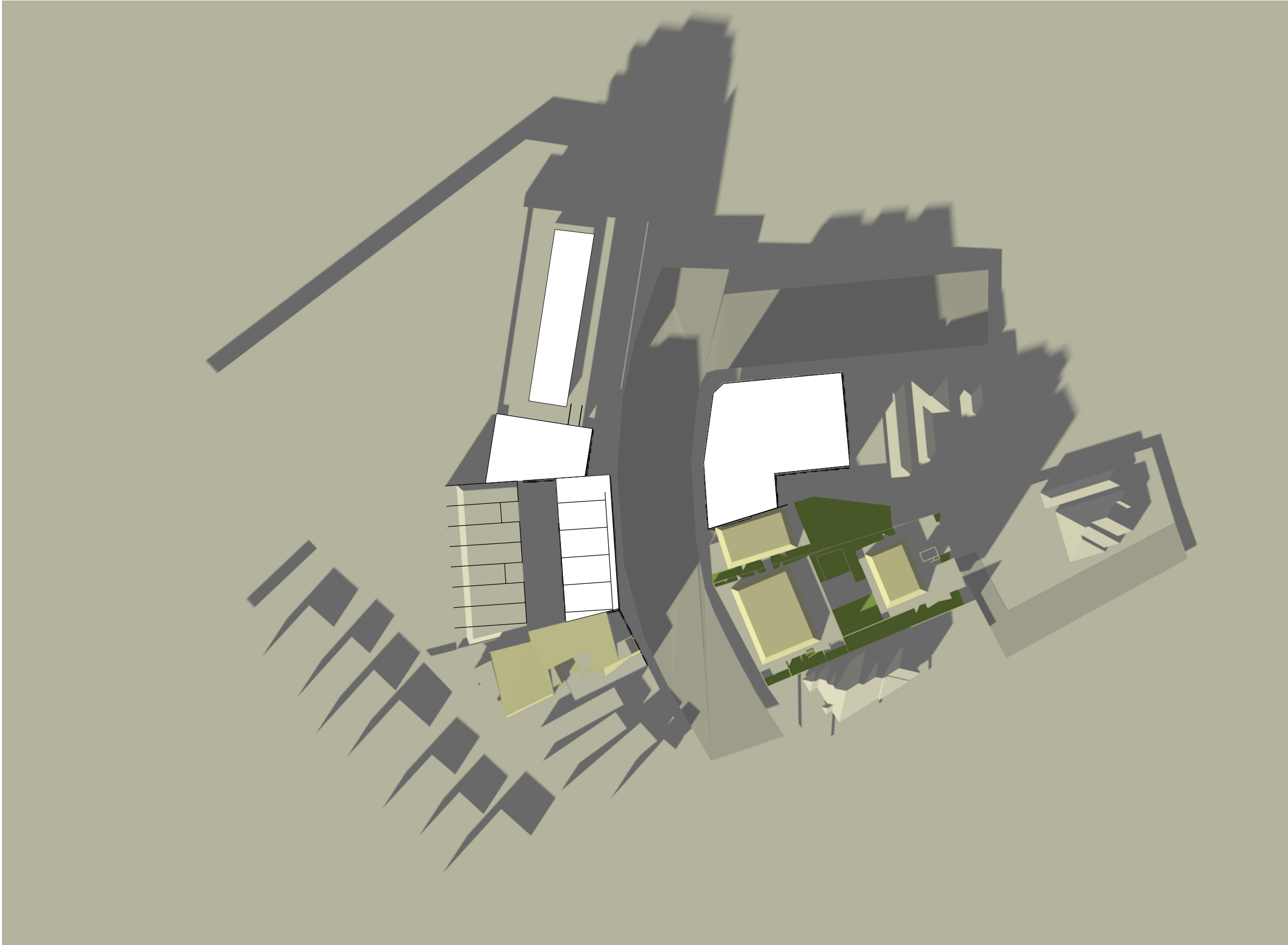


Project	Planning Approval 183 & 218 New Canterbury Rd	Drawn By VG	Dwg Date: JAN 16	Project No. 1522
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale 1:200@A3	Drawing No. Rev A118 A
Title	183 Roof plan			



Project	Mixed uses	Drawn By	Dwg Date:	Project No.
183&218 New Canterbury Rd Lewisham		VG	March 15	1544
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale	Drawing No. Rev
Title	SHADOW DIAGRAM 9AM 21 JUNE		1:100@A3	A119 A





Project	Mixed uses	Drawn By	Dwg Date:	Project No.
83&218 New Canterbury Rd Lewisham		VG	March 15	1544
Client	ILLUMINATE LIVING PTY LTD	Checked By	Scale	Drawing No. Rev
Title	SHADOW DIAGRAM 3PM 21 JUNE		1:100@A3	A121 A

APPENDIX E BOREHOLE LOGS

Job No:	E795
Hole No:	BH1/GW1
Sheet	1 of 2

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Test Method: Auger				
Project Location:					Date: 3/03/2016	Logged by: DT			
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		0.1			Concrete Slab				0.1
		0.2							0.2
		0.3			Fill- crushed bricks, sandy gravel	D-M	S-F		0.3
		0.4							0.4
		0.5							0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9			CLAY, fine grained, medium plasticity, brown with orange mottle	D-M	S-F		0.9
		1.0							1.0
		1.1							1.1
		1.2							1.2
		1.3							1.3
		1.4							1.4
		1.5							1.5
		1.6							1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0			CLAY, fine grained, medium plasticity, grey with red mottle	M	S-F		2.0
		2.1							2.1
		2.2							2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2			CLAY, fine grained, medium plasticity, grey with red mottle with ironstone fragments	M	S-F		3.2
		3.3							3.3
		3.4							3.4
		3.5							3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample
(50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
Wl Liquid Limit

Job No:	E795
Hole No:	BH1/GW1
Sheet	2 of 2

ENGINEERING LOG OF EXCAVATED PIT

Client:					Test Location: Refer to Figure 1						
Project:					Environmental Site Investigation		Test Method: Auger				
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT		
							Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments		Depth (m)	
		3.6			CLAY, fine grained, medium plasticity, light grey with yellow mottle with ironstone fragments	M	F			0.1	
		3.7								0.2	
		3.8								0.3	
		3.9								0.4	
		4.0								0.5	
		4.1			Shaley CLAY, fine grained with weathered shale fragments, medium plasticity, grey with yellow/ orange mottle	M	F			0.6	
		4.2								0.7	
		4.3								0.8	
		4.4								0.9	
		4.5								1.0	
		4.6								1.1	
		4.7								1.2	
		4.8								1.3	
		4.9								1.4	
		5.0			SHALE, fine grain with ironstone fragments, weathered, light grey with red mottle	M	MD			1.5	
		5.1								1.6	
		5.2								1.7	
		5.3								1.8	
		5.4								1.9	
		5.5								2.0	
		5.6								2.1	
		5.7								2.2	
		5.8								2.3	
		5.9			SHALE, fine grain, weathered, light brown	M	MD			2.4	
		6.0								2.5	
		6.1								2.6	
		6.2								2.7	
		6.3								2.8	
		6.4			SHALE, fine grain, weathered, brown	M	MD			2.9	
		6.5								3.0	
6.6	3.1										
6.7	3.2										
6.8	3.3										
6.9								3.4			
7.0								3.5			

Explanatory Notes:							
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>	
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry
S	Soft	L	Loose	D	Disturbed Sample	M	Moist
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	W	Wet
St	Stiff	D	Dense	N	S.P.T. Value	Wp	Plastic Limit
VSt	Very Stiff	VD	Very Dense			WL	Liquid Limit
H	Hard						

Job No:	E795
Hole No:	BH2
Sheet	1 of 1

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		0.1			Fill- crushed bricks, sandy gravel	D-M	L		0.1
		0.2							0.2
		0.3							0.3
		0.4							0.4
		0.5							0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9			CLAY, fine grained, medium plasticity, grey with red mottle with ironstone fragments	M	S-F		0.9
		1.0							1.0
		1.1							1.1
		1.2							1.2
		1.3							1.3
		1.4							1.4
		1.5							1.5
		1.6							1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1						2.1	
		2.2			*END BH2 @2.1m				2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2							3.2
		3.3							3.3
		3.4							3.4
		3.5							3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
Wl Liquid Limit

Job No:	E795
Hole No:	BH3/GW2
Sheet	1 of 3

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation				
Project Location:					218 New Canterbury Rd, Lewisham				
					Date: 3/03/2016 Logged by: DT				
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
##		0.1			Concrete Slab				0.1
		0.2							0.2
		0.3			Fill- crushed bricks, sandy gravel	D-M	S-F		0.3
		0.4							0.4
		0.5							0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1							1.1
		1.2							1.2
		1.3			CLAY, fine grained, medium plasticity, dark brown	M	S		1.3
		1.4							1.4
		1.5							1.5
		1.6							1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1							2.1
		2.2							2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6			CLAY, fine grained, low plasticity, light grey with yellow, orange and red mottle, ironstone traces	M	F	*Seepage @2.7m	2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2							3.2
		3.3			SHALE, weathered, fine grain, grey	D	D		3.3
		3.4							3.4
		3.5							3.5
Explanatory Notes:									
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>			
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry		
S	Soft	L	Loose	D	Disturbed Sample	M	Moist		
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	W	Wet		
St	Stiff	D	Dense	N	S.P.T. Value	Wp	Plastic Limit		
VSt	Very Stiff	VD	Very Dense			WL	Liquid Limit		
H	Hard								

Job No:	E795
Hole No:	BH3/GW2
Sheet	2 of 3

ENGINEERING LOG OF EXCAVATED PIT

Client:					Test Location: Refer to Figure 1					
Project:					Environmental Site Investigation					
Project Location:					218 New Canterbury Rd, Lewisham					
					Date: 3/03/2016 Logged by: DT					
					Surface Level: N/A					
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)	
		3.6							0.1	
		3.7			SHALE, weathered, fine grain, brown	D-M	D		0.2	
		3.8							0.3	
		3.9							0.4	
		4.0							0.5	
		4.1							0.6	
		4.2							0.7	
		4.3				SHALE, weathered, fine grain, dark brown,	D-M	MD		0.8
		4.4								0.9
		4.5								1.0
		4.6								1.1
		4.7								1.2
		4.8								1.3
		4.9								1.4
		5.0								1.5
		5.1								1.6
		5.2								1.7
		5.3								1.8
		5.4								1.9
		5.5								2.0
		5.6								2.1
		5.7								2.2
		5.8								2.3
		5.9								2.4
		6.0								2.5
		6.1								2.6
		6.2								2.7
		6.3								2.8
		6.4								2.9
		6.5								3.0
		6.6								3.1
		6.7								3.2
		6.8								3.3
		6.9				SHALE, weathered, fine grain, dark grey with grey mottle	D-M	MD		3.4
		7.0								3.5
Explanatory Notes:										
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>				
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry			
S	Soft	L	Loose	D	Disturbed Sample	M	Moist			
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	W	Wet			
St	Stiff	D	Dense	N	S.P.T. Value	Wp	Plastic Limit			
VSt	Very Stiff	VD	Very Dense			WI	Liquid Limit			
H	Hard									

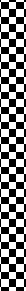
Job No:	E795
Hole No:	BH3/GW2
Sheet	3 of 3

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation				
Project Location:					218 New Canterbury Rd, Lewisham				
					Date: 3/03/2016 Logged by: DT				
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		7.1							7.0
		7.2							7.1
		7.3							7.3
		7.4							7.4
		7.5							7.5
		7.6							7.6
		7.7							7.7
		7.8							7.8
		7.9							7.9
		8.0						8.0	
		8.1			*END BH3/ GW2 @ 8.0m				8.1
		8.2							8.2
		8.3							8.3
		8.4							8.4
		8.5							8.5
		8.6							8.6
		8.7							8.7
		8.8							8.8
		8.9							8.9
		9.0							9.0
		9.1							9.1
		9.2							9.2
		9.3							9.3
		9.4							9.4
		9.5							9.5
		9.6							9.6
		9.7							9.7
		9.8							9.8
		9.9							9.9
		10.0							10.0
		10.1							10.1
		10.2							10.2
		10.3							10.3
		10.4							10.4
		10.5							10.5
Explanatory Notes:									
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>			
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry		
S	Soft	L	Loose	D	Disturbed Sample	M	Moist		
F	Firm	MD	Medium Dense	U50	Undisturbed Sample	W	Wet		
St	Stiff	D	Dense		(50mm diam.)	Wp	Plastic Limit		
VSt	Very Stiff	VD	Very Dense	N	S.P.T. Value	WI	Liquid Limit		
H	Hard								

Job No:	E795
Hole No:	BH4/GW3
Sheet	3 of 3

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		7.1							7.0
		7.2							7.1
		7.3							7.3
		7.4							7.4
		7.5							7.5
		7.6							7.6
		7.7							7.7
		7.8							7.8
		7.9							7.9
		8.0							8.0
		8.1	*END BH4/ GW3 @8.0m						8.1
		8.2							8.2
		8.3							8.3
		8.4							8.4
		8.5							8.5
		8.6							8.6
		8.7							8.7
		8.8							8.8
		8.9							8.9
		9.0							9.0
9.1	*END BH2 @ 9.0m	9.1							
9.2		9.2							
9.3		9.3							
9.4		9.4							
9.5		9.5							
9.6		9.6							
9.7		9.7							
9.8		9.8							
9.9		9.9							
10.0		10.0							
10.1		10.1							
10.2		10.2							
10.3		10.3							
10.4		10.4							
10.5		10.5							

Explanatory Notes:							
<u>Consistency</u>		<u>Density Index</u>	<u>Samples</u>	<u>Moisture</u>			
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry
S	Soft	L	Loose	D	Disturbed Sample	M	Moist
F	Firm	MD	Medium Dense	U50	Undisturbed Sample	W	Wet
St	Stiff	D	Dense	(50mm diam.)	Wp	Plastic Limit	
VSt	Very Stiff	VD	Very Dense	N	S.P.T. Value	WI	Liquid Limit
H	Hard						

Job No:	E795
Hole No:	BH5
Sheet	1 of 2

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1						
Project:					Environmental Site Investigation		Test Method: Auger				
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT		
					Surface Level: N/A						
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)		
		0.1			Concrete Slab				0.1		
		0.2			0.2						
		0.3			Fill- crushed bricks, sandy gravel				D-M	S-F	0.3
		0.4			0.4						
		0.5			0.5						
		0.6			0.6						
		0.7			0.7						
		0.8			0.8						
		0.9			0.9						
		1.0			1.0						
		1.1			1.1						
		1.2			1.2						
		1.3			1.3						
		1.4			1.4						
		1.5			1.5						
		1.6			1.6						
		1.7			1.7						
		1.8			1.8						
		1.9			1.9						
		2.0			2.0						
2.1		2.1									
2.2		2.2									
2.3		CLAY, fine grained, medium plasticity, dark brown	M	S-F	2.3						
2.4		2.4									
2.5		2.5									
2.6		2.6									
2.7		2.7									
2.8		2.8									
2.9		2.9									
3.0		3.0									
3.1		3.1									
3.2		SHALE, fine grain, weathered, grey red mottle with ironstone fragments	D-M	MD	3.2						
3.3		3.3									
3.4		3.4									
3.5		3.5									

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
WL Liquid Limit

Job No:	E795
Hole No:	BH5
Sheet	2 of 2

ENGINEERING LOG OF EXCAVATED PIT

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		3.6							0.1
		3.7							0.2
		3.8							0.3
		3.9							0.4
		4.0							0.5
		4.1			*END BH5 @4.0m				0.6
		4.2							0.7
		4.3							0.8
		4.4							0.9
		4.5							1.0
		4.6							1.1
		4.7							1.2
		4.8							1.3
		4.9							1.4
		5.0							1.5
		5.1							1.6
		5.2							1.7
		5.3							1.8
		5.4							1.9
		5.5							2.0
		5.6							2.1
		5.7							2.2
		5.8							2.3
		5.9							2.4
		6.0							2.5
		6.1						2.6	
		6.2						2.7	
		6.3						2.8	
		6.4						2.9	
		6.5						3.0	
		6.6						3.1	
		6.7						3.2	
		6.8						3.3	
		6.9						3.4	
		7.0						3.5	

Explanatory Notes:

Consistency

VS Very Soft

S Soft

F Firm

St Stiff

VSt Very Stiff

H Hard

Density Index

VL Very Loose

L Loose

MD Medium Dense

D Dense

VD Very Dense

Samples

B Bulk Sample

D Disturbed Sample

U50 Undisturbed Sample (50mm diam.)

N S.P.T. Value

Moisture

D Dry

M Moist

W Wet

Wp Plastic Limit

Wl Liquid Limit

Job No:	E795
Hole No:	BH6/GW4
Sheet	1 of 3

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
##		0.1			Concrete Slab				0.1
		0.2							0.2
		0.3							0.3
		0.4			Fill- crushed bricks, sandy gravel				0.4
		0.5							0.5
		0.6			CLAY, fine grained, medium plasticity, brown/ orange	M	S-F		0.6
		0.7							0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1							1.1
		1.2							1.2
		1.3							1.3
		1.4							1.4
		1.5			CLAY, fine grained, low plasticity, light grey with orange mottle	D-M	F	*SPT @1.5m 7, 14, 46	1.5
		1.6							1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1							2.1
		2.2			CLAY, fine grained, low plasticity, light grey	D-M	St	*Seepage @2.2m	2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6			SHALE, fine grain, weathered, grey with orange mottle	D	MD		2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2			SHALE, fine grain, weathered, light grey	D	D		3.2
		3.3							3.3
		3.4							3.4
		3.5						*SPT @3.5m 13, 19, 25	3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
Wl Liquid Limit

Job No:	E795
Hole No:	BH6/GW4
Sheet	2 of 3

ENGINEERING LOG OF EXCAVATED PIT

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation				
Project Location:					218 New Canterbury Rd, Lewisham				
					Date: 3/03/2016 Logged by: DT				
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		3.6						*Start Core @3.6m	0.1
		3.7			CLAY, fine grained, medium plasticity, grey with red mottle with ironstone fragments	W	F F		0.2
		3.8							0.3
		3.9							0.4
		4.0							0.5
		4.1			SHALE, fine grain, weathered, grey, some fractures	W	D		0.6
		4.2							0.7
		4.3							0.8
		4.4							0.9
		4.5							1.0
		4.6			SHALE, fine grain, dark grey, fractured	W	D		1.1
		4.7							1.2
		4.8							1.3
		4.9							1.4
		5.0							1.5
		5.1							1.6
		5.2							1.7
		5.3							1.8
		5.4							1.9
		5.5							2.0
		5.6							2.1
		5.7							2.2
		5.8							2.3
		5.9							2.4
		6.0							2.5
		6.1							2.6
		6.2							2.7
		6.3							2.8
		6.4							2.9
		6.5							3.0
		6.6							3.1
		6.7							3.2
		6.8							3.3
		6.9							3.4
		7.0							3.5
Explanatory Notes:									
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>			
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry		
S	Soft	L	Loose	D	Disturbed Sample	M	Moist		
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	W	Wet		
St	Stiff	D	Dense	N	S.P.T. Value	Wp	Plastic Limit		
VSt	Very Stiff	VD	Very Dense			WL	Liquid Limit		
H	Hard								

Job No:	E795
Hole No:	BH6/GW4
Sheet	3 of 3

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1					
Project:					Environmental Site Investigation					
Project Location:					218 New Canterbury Rd, Lewisham					
					Date: 3/03/2016 Logged by: DT					
					Surface Level: N/A					
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)	
		7.1			*END BH6/ GW4 @7.1m				7.0	
		7.2							7.1	
		7.3							7.3	
		7.4							7.4	
		7.5							7.5	
		7.6							7.6	
		7.7							7.7	
		7.8							7.8	
		7.9							7.9	
		8.0							8.0	
		8.1			*END BH2 @ 9.0m				8.1	
		8.2							8.2	
		8.3							8.3	
		8.4							8.4	
		8.5							8.5	
		8.6							8.6	
		8.7							8.7	
		8.8							8.8	
		8.9							8.9	
		9.0							9.0	
		9.1							9.1	
		9.2							9.2	
		9.3							9.3	
		9.4							9.4	
		9.5							9.5	
		9.6							9.6	
		9.7							9.7	
		9.8							9.8	
		9.9							9.9	
		10.0							10.0	
		10.1							10.1	
		10.2							10.2	
		10.3							10.3	
		10.4							10.4	
		10.5							10.5	
Explanatory Notes:										
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>				
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry	M	Moist	
S	Soft	L	Loose	D	Disturbed Sample	W	Wet	Wp	Plastic Limit	
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	WI	Liquid Limit			
St	Stiff	D	Dense	N	S.P.T. Value					
VSt	Very Stiff	VD	Very Dense							
H	Hard									

Job No:	E795
Hole No:	BH7
Sheet	1 of 1

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		0.1			Concrete Slab				0.1
		0.2							0.2
		0.3			Fill- crushed bricks, sandy gravel	D-M	L		0.3
		0.4							0.4
		0.5			CLAY, fine grained, medium plasticity, orange with red mottle	M	S-F		0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1							1.1
		1.2			CLAY, fine grained, medium plasticity, light grey with red mottle, ironstone traces	M	S-F		1.2
		1.3							1.3
		1.4							1.4
		1.5							1.5
		1.6			CLAY, fine grained, medium plasticity, light grey with yellow/ orange mottle	M	S-F		1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1			*END BH7 @ 2.0m				2.1
		2.2							2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2							3.2
		3.3							3.3
		3.4							3.4
		3.5							3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
WL Liquid Limit

Job No:	E795
Hole No:	BH8
Sheet	1 of 1

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation				
Project Location:					218 New Canterbury Rd, Lewisham				
					Date: 3/03/2016 Logged by: DT				
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		0.1			Concrete Slab				0.1
		0.2							0.2
		0.3			Fill- crushed bricks, sandy gravel	D-M	L		0.3
		0.4							0.4
		0.5			CLAY, fine grained, medium plasticity, orange with red mottle	M	S-F		0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1							1.1
		1.2			CLAY, fine grained, medium plasticity, light grey with red mottle, ironstone traces	M	S-F		1.2
		1.3							1.3
		1.4							1.4
		1.5							1.5
		1.6			CLAY, fine grained, medium plasticity, light grey with yellow/ orange mottle	M	S-F		1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1			*END BH8 @ 2.0m				2.1
		2.2							2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2							3.2
		3.3							3.3
		3.4							3.4
		3.5							3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
WL Liquid Limit

Job No:	E795
Hole No:	BH9
Sheet	1 of 1

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1							
Project:					Environmental Site Investigation		Test Method: Auger					
Project Location:					218 New Canterbury Rd, Lewisham		Date: 3/03/2016		Logged by: DT			
					Surface Level: N/A							
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)			
		0.1			Concrete Slab				0.1			
		0.2			0.2							
		0.3			Fill- crushed bricks, sandy gravel				D-M	L	0.3	
		0.4			0.4							
		0.5			CLAY, fine grained, medium plasticity, orange with red mottle				M	S-F	0.5	
		0.6			0.6							
		0.7			0.7							
		0.8			0.8							
		0.9			0.9							
		1.0			1.0							
		1.1			1.1							
		1.2			CLAY, fine grained, medium plasticity, light grey with red mottle, ironstone traces				M	S-F	1.2	
		1.3			1.3							
		1.4			1.4							
		1.5			1.5							
		1.6			CLAY, fine grained, medium plasticity, light grey with yellow/ orange mottle				M	S-F	1.6	
		1.7			1.7							
		1.8			1.8							
		1.9			1.9							
		2.0										2.0
		2.1			*END BH9 @ 2.0m							2.1
		2.2										2.2
		2.3										2.3
		2.4										2.4
		2.5										2.5
		2.6										2.6
		2.7										2.7
		2.8										2.8
		2.9										2.9
		3.0										3.0
		3.1										3.1
		3.2										3.2
		3.3										3.3
		3.4										3.4
		3.5										3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample
(50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
WL Liquid Limit

Job No:	E795
Hole No:	BH10/ GW6
Sheet	1 of 2

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1					
Project:					Environmental Site Investigation					
Project Location:					218 New Canterbury Rd, Lewisham					
					Date: 4/03/2016					
					Logged by: DT					
					Surface Level: N/A					
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)	
		0.1			Concrete Slab				0.1	
		0.2	Fill- crushed sandstone		D-M				0.2	
		0.3								0.3
		0.4								0.4
		0.5								0.5
		0.6	Fill- sandy gravel		D-M				0.6	
		0.7								0.7
		0.8								0.8
		0.9								0.9
		1.0								1.0
		1.1								1.1
		1.2								1.2
		1.3								1.3
		1.4								1.4
		1.5								1.5
		1.6	CLAY, fine grained, medium plasticity, grey with light brown/ red mottle		M				F	1.6
		1.7								1.7
		1.8								1.8
		1.9								1.9
		2.0								2.0
2.1				2.1						
2.2	SHALE, weathered, fine grain, ironstone fragments, light grey	W	D	*Seepage @2.2m	2.2					
2.3					2.3					
2.4					2.4					
2.5					2.5					
2.6					2.6					
2.7					2.7					
2.8	IRONSTONE, gravel with weathered shale fragments	W	L		2.8					
2.9					2.9					
3.0					3.0					
3.1	SHALE, fine grain, grey/ brown, fractured	W	D		3.1					
3.2					3.2					
3.3					3.3					
3.4					3.4					
3.5	SHALE, weathered, fine grain, dark grey	W	D		3.5					

Explanatory Notes:

Consistency		Density Index		Samples		Moisture	
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry
S	Soft	L	Loose	D	Disturbed Sample	M	Moist
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	W	Wet
St	Stiff	D	Dense	N	S.P.T. Value	Wp	Plastic Limit
VSt	Very Stiff	VD	Very Dense			WL	Liquid Limit
H	Hard						

Job No:	E795
Hole No:	BH10/ GW6
Sheet	2 of 2

ENGINEERING LOG OF EXCAVATED PIT

Client:					Test Location: Refer to Figure 1					
Project:					Environmental Site Investigation		Test Method: Auger			
Project Location:					218 New Canterbury Rd, Lewisham		Date: 4/03/2016		Logged by: DT	
							Surface Level: N/A			
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)	
		3.6							0.1	
		3.7							0.2	
		3.8							0.3	
		3.9							0.4	
		4.0							0.5	
		4.1							0.6	
		4.2							0.7	
		4.3							0.8	
		4.4							0.9	
		4.5							1.0	
		4.6							1.1	
		4.7							1.2	
		4.8							1.3	
		4.9							1.4	
		5.0							1.5	
		5.1							1.6	
		5.2							1.7	
		5.3							1.8	
		5.4							1.9	
		5.5							2.0	
		5.6							2.1	
		5.7							2.2	
		5.8							2.3	
		5.9							2.4	
		6.0							2.5	
		6.1							2.6	
		6.2							2.7	
		6.3							2.8	
		6.4							2.9	
		6.5							3.0	
		6.6							3.1	
		6.7							*TC Bit Refusal @ 6.7m	3.2
		6.8							*END BH10/ GW6 @6.7m	3.3
		6.9								3.4
		7.0				3.5				
Explanatory Notes:										
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>				
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry			
S	Soft	L	Loose	D	Disturbed Sample	M	Moist			
F	Firm	MD	Medium Dense	U50	Undisturbed Sample	W	Wet			
St	Stiff	D	Dense		(50mm diam.)	Wp	Plastic Limit			
VSt	Very Stiff	VD	Very Dense	N	S.P.T. Value	WI	Liquid Limit			
H	Hard									

Job No:	E795
Hole No:	BH11
Sheet	1 of 2

ENGINEERING LOG OF DRILLED BOREHOLE

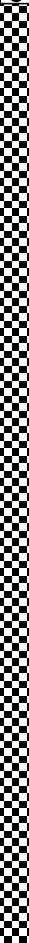
Client:					Test Location: Refer to Figure 1							
Project:					Environmental Site Investigation							
Project Location:					218 New Canterbury Rd, Lewisham							
					Date: 4/03/2016							
					Logged by: DT							
					Surface Level: N/A							
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)			
		0.1			Concrete Slab				0.1			
		0.2			Fill- crushed sandstone				D-M	0.2		
		0.3			0.3							
		0.4			0.4							
		0.5			0.5							
		0.6			Fill- sandy gravel				D-M	0.6		
		0.7	0.7									
		0.8	0.8									
		0.9	0.9									
		1.0	1.0									
		1.1	1.1									
		1.2	1.2									
		1.3	1.3									
		1.4	1.4									
		1.5	1.5									
		1.6			CLAY, fine grained, medium plasticity, grey with light brown/ red mottle				M	F	1.6	
		1.7			1.7							
		1.8			1.8							
		1.9			1.9							
		2.0			2.0							
		2.1	2.1									
		2.2			SHALE, weathered, fine grain, ironstone fragments, light grey				W	D	*Seepage @2.2m	2.2
		2.3			2.3							
		2.4			2.4							
		2.5			2.5							
		2.6			2.6							
		2.7	2.7									
		2.8			IRONSTONE, gravel with weathered shale fragments				W	L		2.8
		2.9			2.9							
		3.0			SHALE, fine grain, grey/ brown, fractured				W	D		3.0
		3.1							3.1			
		3.2							3.2			
		3.3	3.3									
		3.4	3.4									
		3.5			SHALE, weathered, fine grain, dark grey				W	D		3.5

Explanatory Notes:

Consistency		Density Index		Samples		Moisture	
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry
S	Soft	L	Loose	D	Disturbed Sample	M	Moist
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	W	Wet
St	Stiff	D	Dense	N	S.P.T. Value	Wp	Plastic Limit
VSt	Very Stiff	VD	Very Dense			WL	Liquid Limit
H	Hard						

Job No:	E795
Hole No:	BH11
Sheet	2 of 2

ENGINEERING LOG OF EXCAVATED PIT

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 4/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		3.6							0.1
		3.7							0.2
		3.8							0.3
		3.9							0.4
		4.0							0.5
		4.1							0.6
		4.2							0.7
		4.3							0.8
		4.4							0.9
		4.5							1.0
		4.6							1.1
		4.7							1.2
		4.8							1.3
		4.9							1.4
		5.0							1.5
		5.1							1.6
		5.2							1.7
		5.3							1.8
		5.4							1.9
		5.5							2.0
		5.6							2.1
		5.7							2.2
		5.8							2.3
		5.9							2.4
		6.0							2.5
		6.1							2.6
		6.2							2.7
		6.3							2.8
		6.4						2.9	
		6.5						3.0	
		6.6						3.1	
		6.7						*TC Bit Refusal @ 6.7m	3.2
		6.8			*END BH11 @6.7m				3.3
		6.9							3.4
		7.0							3.5
Explanatory Notes:									
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>			
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry	M	Moist
S	Soft	L	Loose	D	Disturbed Sample	W	Wet	Wp	Plastic Limit
F	Firm	MD	Medium Dense	U50	Undisturbed Sample (50mm diam.)	WI	Liquid Limit		
St	Stiff	D	Dense	N	S.P.T. Value				
VSt	Very Stiff	VD	Very Dense						
H	Hard								

Job No:	E795
Hole No:	BH12/ GW7
Sheet	1 of 2

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 4/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		0.1			Concrete Slab				0.1
		0.2			Fill- crushed sandstone, sandy gravel				0.2
		0.3							0.3
		0.4							0.4
		0.5							0.5
		0.6			Concrete Slab				0.6
		0.7			Fill- sandy gravel				0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1			CLAY, fine grained, low to medium plasticity, brown/ dark orange	D-M	S-F		1.1
		1.2							1.2
		1.3							1.3
		1.4							1.4
		1.5							1.5
		1.6							1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1							2.1
		2.2							2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8			CLAY, fine grain with ironstone fragments, low to medium plasticity, grey with red/ orange mottle	D	F		2.8
		2.9							2.9
		3.0							3.0
		3.1						*Seepage @ 3.1m	3.1
		3.2							3.2
		3.3							3.3
		3.4							3.4
		3.5							3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample
(50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
Wl Liquid Limit

Job No:	E795
Hole No:	BH12/ GW7
Sheet	2 of 2

ENGINEERING LOG OF EXCAVATED PIT

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 4/03/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		3.6			SHALE, weathered, fine grain with ironstone fragments grey with red/ orange mottle	D-M	MD		0.1
		3.7							0.2
		3.8							0.3
		3.9							0.4
		4.0							0.5
		4.1			SHALE, fine grain with ironstone fragments, weathered, brown	D-M	MD	-----	0.6
		4.2							0.7
		4.3							0.8
		4.4							0.9
		4.5							1.0
		4.6							1.1
		4.7							1.2
		4.8							1.3
		4.9							1.4
		5.0							1.5
		5.1	1.6						
		5.2	1.7						
		5.3	1.8						
		5.4	1.9						
		5.5			SHALE, fine grain with ironstone fragments, weathered, dark brown	D-M	MD	-----	2.0
		5.6							2.1
		5.7							2.2
		5.8							2.3
		5.9							2.4
		6.0							2.5
		6.1							2.6
		6.2							2.7
		6.3							2.8
		6.4							2.9
		6.5	3.0						
		6.6	3.1						
		6.7	3.2						
		6.8	3.3						
		6.9			*TC Bit Refusal @ 6.9m	-----	3.4		
		7.0					*END BH12/ GW7 @6.9m	3.5	

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample
(50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
Wl Liquid Limit

Job No:	E795
Hole No:	BH8/GW5
Sheet	1 of 3

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation				
Project Location:					218 New Canterbury Rd, Lewisham				
					Date: 4/03/2016				
					Logged by: DT				
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
###		0.1			Concrete Slab				0.1
		0.2			Fill- crushed sandstone	D-M			0.2
		0.3							0.3
		0.4			Concrete Slab				0.4
		0.5			Fill- gravelly sandy clay	D-M			0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1							1.1
		1.2							1.2
		1.3			CLAY, fine grained, medium plasticity, grey/ brown	D-M	S-F		1.3
		1.4							1.4
		1.5							1.5
		1.6							1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1							2.1
		2.2			SHALE, weathered, fine grain, ironstone fragments, light grey	W	D		2.2
		2.3							2.3
		2.4						*Seepage @2.4m	2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8			IRONSTONE, gravel with weathered shale fragments	W	L		2.8
		2.9							2.9
		3.0							3.0
		3.1			SHALE, fine grain, grey/ brown, fractured	W	D		3.1
		3.2							3.2
		3.3							3.3
		3.4							3.4
		3.5			SHALE, weathered, fine grain, dark grey	W	D		3.5

Explanatory Notes:

Consistency	Density Index	Samples	Moisture
VS Very Soft	VL Very Loose	B Bulk Sample	D Dry
S Soft	L Loose	D Disturbed Sample	M Moist
F Firm	MD Medium Dense	U50 Undisturbed Sample (50mm diam.)	W Wet
St Stiff	D Dense	N S.P.T. Value	Wp Plastic Limit
VSt Very Stiff	VD Very Dense		WL Liquid Limit
H Hard			

Job No:	E795
Hole No:	BH8/GW5
Sheet	3 of 3

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation				
Project Location:					218 New Canterbury Rd, Lewisham				
					Date: 4/03/2016 Logged by: DT				
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		7.1							7.0
		7.2							7.1
		7.3							7.3
		7.4							7.4
		7.5							7.5
		7.6			*END BH8/ GW5 @ 7.5m			*TC Bit Refusal @ 7.5m	7.6
		7.7							7.7
		7.8							7.8
		7.9							7.9
		8.0							8.0
		8.1							8.1
		8.2							8.2
		8.3							8.3
		8.4							8.4
		8.5							8.5
		8.6							8.6
		8.7							8.7
		8.8							8.8
		8.9							8.9
		9.0							9.0
		9.1			*END BH2 @ 9.0m				9.1
		9.2							9.2
		9.3							9.3
		9.4							9.4
		9.5							9.5
		9.6							9.6
		9.7							9.7
		9.8							9.8
		9.9							9.9
		10.0							10.0
		10.1							10.1
		10.2							10.2
		10.3							10.3
		10.4							10.4
		10.5							10.5
Explanatory Notes:									
<u>Consistency</u>		<u>Density Index</u>		<u>Samples</u>		<u>Moisture</u>			
VS	Very Soft	VL	Very Loose	B	Bulk Sample	D	Dry	M	Moist
S	Soft	L	Loose	D	Disturbed Sample	W	Wet	Wp	Plastic Limit
F	Firm	MD	Medium Dense	U50	Undisturbed Sample	WI	Liquid Limit		
St	Stiff	D	Dense	N	(50mm diam.) S.P.T. Value				
VSt	Very Stiff	VD	Very Dense						
H	Hard								

Job No:	E795
Hole No:	BH14
Sheet	1 of 1

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1						
Project:					Environmental Site Investigation		Test Method: Auger				
Project Location:					218 New Canterbury Rd, Lewisham		Date: 4/03/2016		Logged by: DT		
					Surface Level: N/A						
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)		
		0.1			Concrete Slab				0.1		
		0.2			0.2						
		0.3			Fill- crushed bricks, sandy gravel				D-M	L	0.3
		0.4									0.4
		0.5			CLAY, fine grained, medium plasticity, orange with red mottle				M	S-F	0.5
		0.6									0.6
		0.7									0.7
		0.8									0.8
		0.9									0.9
		1.0									1.0
		1.1									1.1
		1.2			CLAY, fine grained, medium plasticity, light grey with red mottle, ironstone traces				M	S-F	1.2
		1.3									1.3
		1.4									1.4
		1.5									1.5
		1.6			CLAY, fine grained, medium plasticity, light grey with yellow/ orange mottle				M	S-F	1.6
		1.7									1.7
		1.8									1.8
		1.9									1.9
		2.0									2.0
		2.1			*END BH14 @ 2.0m						2.1
2.2					2.2						
2.3					2.3						
2.4					2.4						
2.5					2.5						
2.6					2.6						
2.7					2.7						
2.8					2.8						
2.9					2.9						
3.0					3.0						
3.1					3.1						
3.2					3.2						
3.3					3.3						
3.4					3.4						
3.5					3.5						

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
WL Liquid Limit

Job No:	E795
Hole No:	BH15
Sheet	1 of 1

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 23/02/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		0.1			Concrete Slab				0.1
		0.2							0.2
		0.3			Fill- crushed bricks, sandy gravel	D-M	L		0.3
		0.4							0.4
		0.5			CLAY, fine grained, medium plasticity, orange with red mottle	M	S-F		0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1							1.1
		1.2			CLAY, fine grained, medium plasticity, light grey with red mottle, ironstone traces	M	S-F		1.2
		1.3							1.3
		1.4							1.4
		1.5							1.5
		1.6			CLAY, fine grained, medium plasticity, light grey with yellow/ orange mottle	M	S-F		1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1			*END BH15 @ 2.0m				2.1
		2.2							2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2							3.2
		3.3							3.3
		3.4							3.4
		3.5							3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
WL Liquid Limit

Job No:	E795
Hole No:	BH16
Sheet	1 of 1

ENGINEERING LOG OF DRILLED BOREHOLE

Client:					Test Location: Refer to Figure 1				
Project:					Environmental Site Investigation		Test Method: Auger		
Project Location:					218 New Canterbury Rd, Lewisham		Date: 23/02/2016		Logged by: DT
					Surface Level: N/A				
Groundwater	Samples/ Field Tests	Depth (m)	Graphic Log	Unified Classification	Description	Moisture Condition	Consistency/ Rel. Density	Additional Comments	Depth (m)
		0.1			Concrete Slab				0.1
		0.2							0.2
		0.3			Fill- crushed bricks, sandy gravel	D-M	L		0.3
		0.4							0.4
		0.5			CLAY, fine grained, medium plasticity, orange with red mottle	M	S-F		0.5
		0.6							0.6
		0.7							0.7
		0.8							0.8
		0.9							0.9
		1.0							1.0
		1.1							1.1
		1.2			CLAY, fine grained, medium plasticity, light grey with red mottle, ironstone traces	M	S-F		1.2
		1.3							1.3
		1.4							1.4
		1.5							1.5
		1.6			CLAY, fine grained, medium plasticity, light grey with yellow/ orange mottle	M	S-F		1.6
		1.7							1.7
		1.8							1.8
		1.9							1.9
		2.0							2.0
		2.1			*END BH16 @ 2.0m				2.1
		2.2							2.2
		2.3							2.3
		2.4							2.4
		2.5							2.5
		2.6							2.6
		2.7							2.7
		2.8							2.8
		2.9							2.9
		3.0							3.0
		3.1							3.1
		3.2							3.2
		3.3							3.3
		3.4							3.4
		3.5							3.5

Explanatory Notes:

Consistency

VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard

Density Index

VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Samples

B Bulk Sample
D Disturbed Sample
U50 Undisturbed Sample (50mm diam.)
N S.P.T. Value

Moisture

D Dry
M Moist
W Wet
Wp Plastic Limit
WL Liquid Limit