



266 Longueville Road, Lane Cove

Geotechnical and Environmental Investigation Report

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EXECUTIVE SUMMARY

Lane Cove Council commissioned SMEC Australia Pty Ltd to carry out combined geotechnical and environmental investigations to provide technical recommendations for a potential re-development of existing bowling grounds located at 266 Longueville Road, Lane Cove. Field work was undertaken over a two day period from the 10th November 2011 to 11th November 2011

The site is located at 266 Longueville Road and covers an area of approximately 0.6 hectares and is separated into three areas, the upper car park, upper bowling green and lower bowling green. Site investigation works were undertaken in all 3 levels. As part of the fieldworks, a total of fifteen (15) boreholes were drilled to depths ranging from 1.5m to 9.4m below existing ground level.

In-situ testing was carried out during the investigation and comprised SPT's and pocket penetrometer tests. Selected samples were sent for subsequent laboratory testing at our subsidiary company SMEC Testing Services.

The results of the contamination soil sampling program performed for this assessment show that the concentrations of chemical contaminants measured in the soil samples retrieved from the site are generally low and below criteria that are protective of human-health for recreational and also standard and high-density residential land use settings. However, the fill in the east of the site below 1.5 m depth has been found to be impacted with lead and PAHs at concentrations which exceed these health-based criteria. That is, the site could present a potential risk to human-health for these land use settings where exposure pathways exist

SMEC have provided an interpretation of subsurface conditions for the site based on the results of the geotechnical investigation. A geotechnical site model has been developed and subsequent design parameters have been recommended based on the results of the laboratory testing combined with past experience in similar ground conditions.

SMEC have addressed the primary geotechnical components of the proposed works and provided recommendations on both deep and shallow foundations, site preparation, excavation rippability and temporary and permanent batter slopes.

Recommendations have been made for the requirement of further geotechnical investigations to enable the project to progress to the concept design stage.

1 INTRODUCTION

Lane Cove Council commissioned SMEC Australia Pty Ltd to carry out combined geotechnical and environmental investigations to provide technical recommendations for a potential re-development of existing bowling grounds located at 266 Longueville Road, Lane Cove. It is understood that Lane Cove Council are undertaking an assessment of the site to understand the feasibility for re-development. Lane Cove Council have requested that SMEC Australia provide a Geotechnical Recommendation Report to assist in the feasibility of the plan.

The key geotechnical features of the project include:

- Site evaluation;
- Borehole drilling (non core drilling);
- In-situ testing including Standard Penetration Testing (SPT); and Pocket Penetrometer Testing (P.P);
- Laboratory testing of subsurface materials; and
- Environmental sampling and laboratory testing of soils for potential contamination.

Figure 1 provides a locality map outlining the project area, Figure 2 provides an overview geological map of the area, Figure 3 provides a borehole location plan and Figure 4 shows cross section and long section interpretation lines.

1.1 Geotechnical Recommendation Report

This Geotechnical Recommendation Report (GRR) presents the results of the geotechnical investigation works obtained from site investigation works undertaken during November 2011.

Investigations have been carried out in accordance with our “Proposal for Geotechnical Investigation, 266 Longueville Road, Lane Cove” submitted 11th October 2011 and to Australian Standard AS1729:1993.

1.2 Scope of Investigations

The purpose of undertaking site geotechnical investigations is to better understand the subsurface site conditions and geology, particularly the depth of fill, depth to bedrock and composition/characteristics of fill materials.

The scope of investigation works undertaken is broadly defined by a combination of site topography, proposed works and the existing understanding of the site geology.

1.3 Structure of Report

Section 2 of this report reviews all available data and describes the site topography and geology. This exercise has been based primarily on site visits and referenced geological and topographical maps together with any relevant reporting.

Section 3 of this report outlines and describes the methodology adopted for the site investigation works detailing drilling techniques, in-situ testing and laboratory testing undertaken.

Section 4 of this report presents the results of the site investigation works together with an interpretation of the subsurface conditions present on site.

Section 5 of this report presents the results of the contamination investigation and site assessment.

Section 6 of this report presents recommended geotechnical design parameters for consideration in the design of the site development.

Section 7 of this report discusses design considerations and presents geotechnical recommendations for the development of the site.

Site photographs are provided in Appendix A. Borehole logs with explanatory notes are provided in Appendix B.

Laboratory testing results are provided in Appendix C. Site interpretations (cross sections and long sections) are provided in Appendix D.

2 SITE CONDITIONS AND GEOLOGY

2.1 Topographical Setting and Site Observations

For the purposes of this site evaluation, the site has been categorised into three distinct areas, these are:

1. The upper car park,
2. The upper level bowling green; and
3. The lower level bowling green

2.1.1 Car Park

The car park is accessed via entry and exit points leading from Longueville Road. The car park is approximately 750m² and is a mixture of sandy gravel and asphalt surface. The existing asphalt surface was assessed to be in poor condition. To the north of the car park are residential houses, to the west and south is Longueville Road and to the east is the upper bowling green. Several large trees exist in the north western corner of the car park. Buried gas mains were indicated as present within the pavement immediately south of the car park and are understood to terminate under the road carriageway at a junction box. During the time of the investigation the car park was used on a casual basis with no formal markings identified on the ground. A total of 2 boreholes were carried out in this location.

2.1.2 Upper Bowling Green

The upper bowling green comprises a flat grassy area, approximately 1m lower than that of the car park level with a gentle slope separating the car park and the bowling green. During the investigation the upper bowling green was accessed via a gap in the timber post fence in the north eastern corner of the car park, this access is restricted to vehicles less than 3.0m wide and 3.2m high. The bowling surface is level and depressed around 400mm lower from the surrounding grassed areas; the edges of the bowling green have concrete kerbing and associated drainage. To the south of the bowling green is a grassed area with pedestrian pavement leading to a small single storey timber construction type building, understood to be the Lane Cove Music and Cultural Centre. A small brick retaining wall (up to 1m height) runs along the western and southern boundaries.

2.1.3 Lower Bowling Green

Access to the Lower Bowling Green is via a steep concrete driveway to the south. This driveway is understood to provide access to the Lane Cove Music and Cultural Centre together with car parking for residential units at 268-270 Longueville Road, and at the lower level is restricted in width to 3.0m. The lower bowling green is approximately 5.7m lower than the Upper Bowling Green Level.

The upper level is in part retained by a “permacrib” type wall with a face angle of approximately 80°. At the time of the investigation the face was heavily vegetated, therefore an inspection of structure was not possible. The south eastern portion of the Lower Bowling Green is retained by a 1-2m high sandstone block wall with sparse vegetation. The sandstone wall on the western boundary is directly founded on the outcropping sandstone bedrock. To the east of the site in an un-retained slope approximately 40m height, leading down to the golf course, this slope is approximately 30-35° and heavily vegetated.

2.2 Regional Geology

The 1:100,000 Geological Survey map sheet of Sydney (9130) indicates that the site is underlain by the following geological unit:

- Wianamatta Group consisting of Hawkesbury Sandstone (Middle Triassic age); and

The Hawkesbury Sandstone is the most prevalent bedrock geology in the area and consists of a medium to coarse grained quartz sandstone with very minor shale and laminate lenses. Further to the north of the site (towards Lane Cove Village) the predominant geology consists of Ashfield Shale, a carbonaceous claystone, siltstone and laminite. Bedding and laminae encountered within these formations are generally sub-horizontal. Jointing and minor faulting is common and is typically sub-vertical.

3 INVESTIGATION METHODOLOGY

3.1 Access to Site

During the period of investigation Areas 1, 2 and 3 (as defined in Section 2.1) had specific site access points. A summary of the access and site establishment requirements for each of the locations is shown below.

Area	Boreholes	Access Requirements
1	BH1 and BH2	The car park is located at 266 Longueville Road, Lane Cove. Access is via lowered kerb and gutter with entrance and exit points.
2	BH3, BH4, BH5, BH6, BH7, BH8 and BH9	The Upper Bowling Green was accessed through the narrow openings from the car park. The openings are approximately 3.0m wide.
3	BH10, BH11, BH12, BH13, BH14 and BH15	Access to the Lower Bowling Green is via concrete driveway to the south. Access is restricted to 3.0m width at the lower part of the driveway..

3.2 Equipment

3.2.1 Positioning System

The geotechnical information has been referenced using the latest revision of World Geodetic System (WGS 84). The WGS 84 format was used in the field by site personnel to identify approximate positions ($\pm 1500\text{mm}$) of boreholes and other features as required.

3.2.2 Geotechnical Equipment

Boreholes were drilled by BHC Drilling Pty Ltd using a Edson 3000 drill rig mounted on a truck chassis capable of drilling to depths exceeding 100m.

3.3 Sampling And In-Situ Testing

3.3.1 Work Performed

Borehole drilling was undertaken between the 10th November and 11th November 2011. A total of fifteen (15) boreholes were drilled for the investigations, comprising non-cored boreholes to target depth (bedrock level).

The drilling method primarily involved auger drilling with TC bit attachment for drilling of soils and extremely to highly weathered rock.

The recovered soil and rock samples were logged in accordance with AS1726:1993 by the Experienced SMEC Geologist who supervised the site works on a full time basis. Borehole logs are presented in Appendix B.

Boreholes were backfilled on completion using the drill cuttings and any spoil available in the area. The boreholes were compacted to limit settlement and depressions in the ground.

The location, elevation, borehole depths and techniques used for the site works are summarised below in Table 3.1.

Table 3.1 Summary of works undertaken

Location ID	Easting	Northing	Surface Reduced Level (m) AHD*	Final Depth	Method of Investigation
BH1	330825	6256063	56.0	1.5	Auger
BH2	330825	6256047	56.0	1.5	Auger
BH3	330842	6256055	55.2	1.5	Auger
BH4	330856	6256037	55.2	2.0	Auger
BH5	330874	6256048	55.2	4.0	Auger
BH6	330842	6256025	55.2	1.5	Auger
BH7	330870	6256040	55.2	3.0	Auger
BH8	330866	6256022	55.2	4.5	Auger
BH9	307095	6254033	55.5	1.5	Auger
BH10	330887	6256015	49.5	3.5	Auger
BH11	330916	6256014	49.5	9.4	Auger
BH12	330900	6256004	49.5	6.0	Auger
BH13	330915	6256004	49.5	8.7	Auger
BH14	330881	6255997	49.5	3.5	Auger
BH15	330912	6255990	49.5	7.4	Auger

3.3.2 Sampling and In-Situ Testing

Soil sampling comprised the recovery of SPT split-spoon samples and some disturbed auger grab samples at various depths. The combined investigation recovered a total of 22 SPT samples.

Soil samples were appropriately packaged and placed in a plastic bag, sealed with tape and clearly labelled before being transported to a secure location for subsequent transfer to the laboratory.

Environmental sampling was undertaken at all borehole locations and comprised the recovery of soil samples at 1.5m intervals and for each lithological layer. Samples were placed in sterilised glass jars with approximate volumes of 250 ml, labelled, logged, registered and then placed in an eski.

For QA/QC purposes, duplicate and triplicate samples (a minimum of 15% of the total sample quantity) were taken. This amounted to one additional sample after every 10 samples and two additional samples after every 20.

In-situ testing for boreholes comprised Standard Penetration Testing (SPT) performed down-hole, performed at 1.5 m intervals. In addition to the SPT, pocket penetrometer testing was undertaken on recovered cohesive SPT samples where possible to quantify the stiffness/consistency of the recovered material.

The sampling and in-situ testing programme was based on that defined in the Geotechnical Proposal, and considered the engineering requirements of the investigation and the nature of the materials encountered.

3.4 Geotechnical Laboratory testing

Following completion of logging and on-site testing, samples were uniquely labelled, stored and subsequently scheduled for laboratory geotechnical testing at our subsidiary company SMEC Testing Services Pty Ltd, a NATA accredited laboratory.

A suite of laboratory testing has been scheduled to enable geotechnical parameters to be defined for the materials encountered. Table 3.2 below outlines the testing type and quantum that has been scheduled.

Table 3.2 Schedule of Laboratory Tests

Test Type	Quantum
Moisture Content	5
Particle Size Distribution	5
Atterberg Limit and Linear Shrinkage	4

Geotechnical and environmental laboratory test results are presented in Appendix C. Environmental results are summarised in Appendix I.

4 GEOTECHNICAL INTERPRETATION

4.1 General

The following sections present our geotechnical model and interpretation of subsurface conditions, which is based on currently available geotechnical information. The subsurface material is classified and identified using the classification systems for rock and soil units discussed in Section 4.2. Section 4.3 presents geotechnical models and descriptions of each of the geological units encountered throughout the site. Groundwater issues for the project are discussed in Section 4.4.

4.2 Geotechnical Classification

To assist in assessing the ground behaviour during design, two classification systems (one for rock and one for soil) have been adopted.

4.2.1 Classification Of Soils

A variety of soils were sampled during the investigation, with clays, sands and gravels being encountered across the site. Soils have been described using the Unified Soil Classification System (USCS). The USCS soil classes are broadly divided into three groups: gravels, sands and silts/ clays. Each group can be subdivided into five or six units based on the soil consistency and density. The adopted Soil Classification System is presented below in Table 4.1.

Table 4.1 Soil Classification System

Soil Type	USC Symbol	Consistency/Density
Clays and Silts	CL, CI, CH, ML, MI, MH	Very Soft (VS)
		Soft (S)
		Firm (F)
		Stiff (St)
		Very Stiff (VSt)
		Hard (H)
Sands and poorly graded gravels	SW, SP, GP, SM, SC	Very Loose (VL)
		Loose (L)
		Medium Dense (MD)
		Dense (D)
		Very Dense (VD)
Gravels (well graded)	GW, GM, GC	Very Loose (VL)
		Loose (L)

Soil Type	USC Symbol	Consistency/Density
		Medium Dense (MD)
		Dense (D)
		Very Dense (VD)

4.2.2 Classification Of Rock

Based on past experience with similar rock conditions, the rock units encountered i.e. shale, siltstone/sandstone, were further classified based on the resistance to drilling penetrations and laboratory testing of recovered rock chips, as shown below in Table 4.2. Where applied to the classification system, the rock class is determined by its weakest criterion.

Table 4.2: Rock Classification System

Class	Field Strength Assessment		Weathering
	Strength Level	UCS (MPa)	
V	VL	0.6 – 1.50	Extremely Weathered
IV	L	1.50 – 5.0	Highly Weathered
III	M	5.0 – 20	Moderately Weathered
II	H	20 – 60	Slightly Weathered
I	H	20 – 60	Fresh
	VH	60 – 200	
	EH	>200	

UCS=Unconfined Compressive Strength

In general, the classification system in the above table follows Pells et. al. (1998) system of rock classification for sandstone and shale in the Sydney region.

4.3 Subsurface Unitisation And General Descriptions

Typically the geology over the site is fairly consistent, comprising 3 main units; these are topsoil/fill, residual soils and weathered sandstone bedrock. A summary of these units is provided below in Table 4.3.

Table 4.3: Geotechnical Unit Descriptions

Unit	Thickness (m)	Description
Unit 1: Topsoil	0.2 – 0.6	Fine to medium grained silty sand, with rootlets in the top 100mm Unit 1 materials were encountered in all boreholes undertaken through the bowling green's.
Unit 2: Fill	Varies	Generally a mixture of clay, silt, sand and gravels of different composition. The fill also differs in compaction level, ranging from poorly compacted (SPTN < 5) to well compacted (SPTN >10) Unit 2 materials were encountered in most boreholes, except BH3, BH6, BH9 and BH14.
Unit 3: Residual Soil	Varies	Generally a mixture of clay, silt and sand, however is predominantly composed of clay. This unit has a consistency of stiff/dense and is derived from the weathering of the underlying sandstone. Unit 3 materials were encountered in BH1, BH5, BH7, BH8 and BH14.
Unit 4: Sandstone Bedrock	Varies	Sandstone bedrock was encountered in all investigation locations. The sandstone bedrock is estimated to be very low to low strength, becoming low to medium strength with depth.

4.3.1 Unit 1: Topsoil

Unit 1 Topsoil materials were encountered in all boreholes carried out through the bowling green (BH3 to BH15). The extent of the materials varies from 0.2m to 0.6m of the existing surface level. The materials comprised of silty sand of low plasticity, brown in colour with rootlets in the top 100mm. Unit 1 materials were generally underlain by fill and/or residual soils. BH3, BH6, and BH9 encountered weathered bedrock directly beneath the topsoil.

4.3.2 Unit 2: Fill (poorly to well compacted)

Unit 2 Fill materials were encountered in all boreholes, with the exception of BH3, BH6, BH9 and BH14. Fill materials comprise a mixture of clay, silt, sand and gravels. The compositions of the materials differs from borehole to borehole. In BH1, the fill is predominantly silt. In BH2, BH4, BH11 and BH12, the fill is predominantly gravel with silt, sand, or clay. In BH10, BH13 and BH15, the fill is predominantly sand and in BH5, BH7, BH8, BH11, BH12 and BH15, the fill is predominantly clay.

Unit 2 Fill materials were observed to be grey/brown/orange in colour, depending on the soil composition. The fill varied in compaction from poorly compacted to well compacted. The compaction level can be estimated based on SPT N values, where an SPT value of

less than 5 correlates to poorly compacted, between 5 to 10 is moderate compaction level and SPT value above 10 indicates that the fill is well compacted.

4.3.3 Unit 3: Residual Soil

Unit 3 Residual materials were encountered in BH1, BH5, BH7, BH8 and BH10. The material is derived from weathering of the underlying sandstone bedrock. Residual materials varied in thickness from 0.3-1.5m. The materials comprised of silt, sand and clay, likewise to the fill, their compositions differs from location to location. However, the majority of the boreholes encountered clay materials. The plasticity of residual soil found varied from low to high plasticity. Based on results of the in-situ testing, the residual clay has consistency of stiff, while the residual sand has a relative density of medium dense to dense.

4.3.4 Unit 4: Sandstone Bedrock

Unit 4 Sandstone Bedrock materials were encountered throughout the site. The sandstone bedrock is fairly uniform across the site, being fine to medium grained, very low to low strength becoming medium strength with depth (estimated to be medium strength 0.5 to 1m depth below top of bedrock surface). Colour variances were noted across the site from pale grey to orange in colour, possibly due to variances in the weathering state. The bedrock generally dips to the east at around 30°.

4.4 Groundwater

Throughout the investigation, seepage was observed at the soil-rock interface, and thus the groundwater level is expected to follow the profile of the underlying sandstone bedrock.

4.5 Interpretation of Subsurface Conditions

A series of cross section and long sections have been produced using the gINT Fence Tool. Figure 4 outlines the start and end points along with orientation for the section lines. And interpretation is given below on the subsurface conditions.

4.5.1 Long Section A-A'

Section A-A' shows the bedrock steeply dipping towards the eastern boundary of the Upper Bowling Green, with the depth of fill materials increasing significantly up to the existing retaining wall. It is likely that the majority of the Upper Bowling Green has been constructed over a remnant rock outcrop and that the majority of the filling is limited to the eastern boundary. The interpreted bedrock profile has also accounted for the results of BH4 however due to its proximity it has not been included on the long section.

4.5.2 Long Section B-B'

Section B-B shows the bedrock dipping consistently to the east at around 30° with the depth of fill materials increasing to the east. BH8 encountered fill materials with a thickness of 2.0m beyond which residual soils were encountered. The long section illustrates that the depth of filling of the lower level is significantly greater than that encountered for the upper level, particularly to the east.

4.5.3 Long Section C-C'

Section C-C shows the bedrock as near to surface for the upper level becoming deeper at the lower level. Bedrock was observed outcropping adjacent to BH14 and can be seen in

the foundations for the Music and Cultural Centre. The depth of filling encountered on the lower level in BH15 is consistent with that shown in long section B-B'

4.5.4 Cross Section D-D'

Cross section D-D' illustrates a gently varying bedrock topography with overlying residual soils and fill, the bedrock can be seen deepening to the north and south with increased fill depths.

4.5.5 Cross Section E-E'

Cross section E-E' fully demonstrates the deeper fill materials present at the eastern boundary of the Lower Bowling Green level. It appears that the bedrock is dipping steeply to the east north east. No in-situ bedrock was observed on the un-retained face.

5 CONTAMINATION ASSESSMENT

5.1 Introduction

The objective of the preliminary contamination assessment component of the project was to provide advice on the potential for environmental exposures at the property due to chemical contaminants in the soil. The assessment was performed in accordance with Office of Environment and Heritage (OEH) and national guidelines for the assessment and management of site contamination.

The scope of the assessment included:

- Review of historical land title information relating to the site;
- Examination of aerial photographs to identify historical land uses at the site and its surrounds;
- Review of local Council, WorkCover NSW (WorkCover) and OEH records;
- Site inspection;
- Appraisal of local geology and hydrogeology;
- Soil sampling from 15 locations across the site and laboratory analysis of the soil samples retrieved for a broad screen of potential contaminants;
- Assessment of analytical data and quality assurance (QA);
- Appraisal of the contaminant concentrations in the soil on the site based on the results of the assessment, including an appraisal of potential harm to human-health and the environment, potential exposure pathways and off-site impacts;
- Recommendations for the site in accordance with OEH guidelines; and
- Preparation of a confidential report to Lane Cove Council on the results of the investigation.

5.2 Site Identification

The site at 266 Longueville Road, Lane Cove has an area of approximately 1.5 hectares and is defined as Lot 1 in Deposited Plan (DP) 321353, Lot 322 in DP 1102537 and Lot 1 in DP 91655, Parish of Willoughby, County of Cumberland. The location of the site is shown on Figure 1.

The site is within the Lane Cove Council local government area, and the land is zoned Public Recreation (RE1).

5.3 Site Features

The site was inspected on 10 and 11 November 2011 to confirm the condition of the land and to identify potential contamination sources. A plan showing the current site configuration is shown on Figure 3. The key site features as determined by the site inspection are:

- The majority of the site is covered by two former bowling greens, which appear not to have been used in some time. A gravel and asphalt car parking area is also located in the north-western corner of the site, and a small community building (which appears to be a former clubhouse) is located in the south of the site. The eastern portion of the site is undeveloped and covered by a dense vegetation

community of native trees and exotic weeds, although some clearing has occurred along the eastern site boundary in association with a golf course which occupies the adjacent land.

- The land has a natural slope to the east; however, the site has a stepped profile which shows that filling is likely to have occurred for levelling purposes, primarily for the construction of the bowling greens. The filling volume significantly exceeds that of any cutting, which demonstrates that substantial volumes of soil have been imported. Based on the morphology of the land filling up to approximately 8 m depth is likely to have occurred in the east of the site.
- No evidence of any current or former potentially contaminating facilities or installations was observed on the site during the assessment.

The land surrounding the site to the north, south and west is used for residential purposes, whilst a golf course is located on the land to the east.

5.4 Geology And Hydrogeology

A detailed assessment of the site geology is given in Section 4 of this report. Our review of the Acid Sulfate Soil (ASS) risk maps provided on the OEH NSW Natural Resource Atlas (NR Atlas) also shows that the site is located on land that is not expected to be affected by ASS's. This is supported by the geology and geomorphology of the site.

A search of the Department of Natural Resources (DNR) groundwater database was also performed to identify wells in the vicinity of the site. The search results identified eight registered groundwater monitoring wells located within 2 km of the site, 5 of which are registered for 'monitoring' purposes, two are registered as irrigation bores and one is registered for 'domestic' purposes.

Aquifer depths in the wells (where reported) are stated as being between 4 m and 144 m below the ground surface, and the aquifer lithology is reported to be sandstone. Further, the database information shows that multiple aquifers are expected to be present in the sandstone bedrock. The depth to groundwater in the closest bore to the site (150 m to the south-east) is stated as being at least 16.8 m below the ground surface. Further, perched groundwater was encountered at the soil/rock interface in a number of boreholes drilled on the site at depths of between 2.0 m and 8.5 m.

A summary of the site hydrogeology is summarised in Table 5.1.

Table 5.1: Site Hydrogeology

Site Hydrogeology	Reported Result
Depth to Groundwater at Site:	2-9 m (local perched groundwater) ¹ >15 m (regional aquifer) ²
Aquifer Type and Lithology:	Clay and Sandstone ^{1,2}
Perched groundwater:	Groundwater encountered at the site is locally perched, flowing along the soil/bedrock interface ¹
Local Groundwater Flow Direction:	East, along axis of local hillslope ²
Regional Groundwater Flow Direction:	East, towards the Gore Creek drainage valley ²

Site Hydrogeology	Reported Result
Receiving Environments:	Gore Creek, located approximately 100 m to the east of the site ² . Gore Creek drains to the Lane Cove River.

¹ Actual groundwater conditions based on drilling observations.

² Inferred groundwater conditions based on site geology and geomorphology, and geological map review.

5.5 Site History Review

The history of the land subject to the investigation was obtained from the following sources:

- Aerial photographs of the site and surrounds held by the Department of Lands;
- Section 149 (2) Certificates provided by Lane Cove Council;
- WorkCover Records;
- Historical land titles; and
- OEH records.

5.5.1 Aerial Photographs

Aerial photographs from 1930, 1951, 1961, 1970, 1986, 1994, 2002, 2004 and 2005 were examined to identify previous land uses at the site and its surrounds. A copy of each aerial photograph showing the location of the site is provided in Appendix E, and a description of the observations made is provided in Table 5.2.

Table 5.2: Aerial Photograph Observations

Year	Site Features	Surrounding Land Use
1930	The site predominantly comprises vacant and undeveloped land which is covered in trees, however, a small partially cleared area is visible in the north-west of the site.	Residential properties are located to the north of the site and also across Longueville Road to the west. The land to the south and west of the site is vacant and undeveloped.
1951	The site features remain unchanged.	The land surrounding the site also remains essentially unchanged; however, several residences have been constructed adjacent to Longueville Road on the land to the south-west of the site.
1961	The western portion of the site has been cleared since 1951, with a bowling green now being visible in this area. A small rectangular shaped building, possibly a clubhouse, has also been constructed in the south of the site. The eastern portion of the site remains vacant and undeveloped.	The land surrounding the site remains essentially unchanged.

Year	Site Features	Surrounding Land Use
1970	The western portion of the site remains essentially unchanged, although a car parking area is now visible in the north-western corner of the site. The central-eastern portion of the site has also been cleared and a second bowling green is now visible. However, a dense grove of trees remains in the east of the site whilst the land along the eastern margin of the property has been cleared in association with the construction of a golf course.	The surrounding land uses also to the north and west remain essentially unchanged, however, the land to the south has been redeveloped for commercial/ industrial purposes. The land to the east has also been developed as a golf course.
1986, 1994, 2002, 2004 & 2005	The site remains essentially unchanged.	The surrounding land uses also remain essentially unchanged.

5.5.2 Section 149 (2) Certificates

Section 149 (2) Certificates were obtained from Lane Cove Council to determine if any restrictions have been placed on the land due to contamination related risks. A copy of the certificates is provided in Appendix F. The Section 149 (2) Certificates show that there are no notices under the provisions of the Contaminated Land Management Act 1997 issued in relation to the site. Further, the site has not been the subject of a Site Audit.

5.5.3 Historical Title Search

Copies of the historical land title transfers were obtained from the Land Titles Office, and are provided in Appendix G. A summary of the property ownership and occupant details is summarised in Table 5.3.

Year	Registered Owner/Occupant
<u>Lot 1 in DP 321353</u> 1928-1957 1957-present	The Commonwealth of Australia Lane Cove Council
<u>Lot 1 in DP 91655</u> 1854-1960 1960-present	Archibald Little and John Yeomans (by Grant) Lane Cove Council
<u>Lot 322 in DP 1102537</u> 1929-1948 1948-1956 1956-1958 1958-present	Ettie Emma Jane MacDougall Dorothy Muriel MacDougall The Cumberland County Council Lane Cove Council

5.5.4 Anecdotal Information

Information provided by Lane Cove Council suggests that the site was occupied by the Lane Cove Ladies Bowling Club from the 1950s until the mid-1990s, after which time bowling activities ceased. Since the 1990s the site is reported to have been a community facility occupied by the Lane Cove Music and Cultural Society.

5.5.5 NSW OEH Records

The OEH contaminated land public register was inspected on 16 December 2011 to determine if any notices have been issued for the site by OEH under the *Contaminated Land Management Act 1997* or if the site is registered under the *Protection of the Environment Operations Act 1997*. Our review shows that the site is not listed under the provisions of these Acts, nor is it located in the vicinity of a listed property. Further, our review shows that the site is not listed on OEH's database of properties for which a notification has been received (under the provisions of the *Contaminated Land Management Act 1997*) due to site contamination.

5.5.6 WorkCover NSW Records

WorkCover was also requested to search their Dangerous Goods License database to identify if the property is currently, or had previously been licensed for the storage of dangerous goods. However, WorkCover advised that they hold no records relating to the site. The response provided by WorkCover is presented in Appendix H.

5.5.7 Site History Summary

Based on the historical information reviewed, the site appears to have been vacant and undeveloped land until the 1950s when bowling greens were constructed on the site. The site was subsequently used for recreational purposes (lawn bowls) until the mid-1990s, after which time the bowling activities ceased and the property has since been occupied by community organisations.

5.6 Potential Contamination Sources

The potential for the site to be contaminated from on-site sources and off-site sources was considered by SMEC during this investigation. Based on the findings of our site inspection and site history review the following actual or potential contamination sources were identified:

- A range of organic and inorganic contaminants in imported fill material. As the source of the fill cannot be confirmed it has the potential to be contaminated; and
- Heavy metals, pesticides and herbicides that may have resulted from the use of weed suppressants chemicals in association with green keeping activities at the site.

5.7 Data Quality Objectives

The National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) and Australian Standard (AS) 4482.1-2005 recommend that data quality objectives (DQOs) be implemented during the investigation of potentially contaminated sites. The DQO process described in AS 4482.1-2005 outlines seven distinct steps which are designed to ensure an investigation is performed in a structured and efficient manner. The seven steps and the associated processes that were implemented to ensure data and decision making quality are outlined below:

Step 1 – State the Problem

The site is currently used for recreational purposes; however, it is likely that the property will be redeveloped for a residential land use. Prior to this assessment there was insufficient data to determine if the site is likely to be suitable for these uses.

Step 2 – Identify the Decision

To determine if the concentrations of contaminants in the soil at the site present an unacceptable risk to human-health or the environment for both recreational and residential land use settings.

Step 3 – Identify Inputs to the Decision

To enable a decision regarding the extent of soil contamination at the site to be made, the following inputs were required:

- Soil sampling and analysis from 15 locations across the site;
- Analysis of the soil samples for a broad screen or potential contaminants; and
- Implementation of a quality assurance/quality control (QA/QC) program.

Step 4 – Define the Study Boundaries

The assessment was undertaken within the boundaries of the site located at 266 Longueville Road, Lane Cove, NSW. The boundaries of the site are defined in Section 5.1 and are shown on Figure 1.

Step 5 – Develop a Decision Rule

To determine if any soil impacts at the site are significant for recreational and residential land use settings, data was compared to relevant OEH endorsed criteria. The criteria for this assessment are further discussed in Section 5.10.

Step 6 - Specify Limits on Decision Errors

To ensure the precision, accuracy, completeness and comparability of data a field QA program was implemented and acceptable error limits were defined. These are further discussed in Sections 5.9.2 and 5.9.3.

Step 7 – Optimize the Design for Obtaining Data

To ensure there are sufficient, reliable data to enable the project objectives to be met the following was implemented:

- Collection, storage and transport of soil samples in an appropriate manner to ensure sample integrity (refer to Section 5.8.1 and 5.8.2);
- Obtaining samples from an appropriate number of locations to provide a preliminary screen of a 1.5 hectare site for potential contamination in accordance with OEH guidelines; and
- The collection of an appropriate number of samples from each location and the analysis of samples for an appropriate analytical suite to screen the site for potential soil contamination, based on the potential contamination sources identified from our site inspection and site history review.

5.8 Field Investigation

The soil sampling activities for the contamination assessment were undertaken by SMEC on 10 and 11 November 2011. The assessment was performed according to:

- OEH guidelines comprising:
 - *Contaminated Sites: Guidelines for Assessing Service Station Sites, 1994;*
 - *Contaminated Sites: Sampling Design Guidelines, 1995;*
 - *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 1997;*
 - *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (2nd Edition), 2006;*
 - *Guidelines for the Assessment and Management of Groundwater Contamination, 2007;*
- Guidelines issued under Schedule B of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM), December 1999;
- *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* published by the Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council, January 1992 (ANZECC Guidelines); and
- Australian Standard 4482.1-2005: *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-volatile and Semi-volatile Compounds, 2 November 2005, Standards Australia.*

5.8.1 Sampling Methodology

The soil sampling program for the contamination assessment was undertaken in conjunction with the geotechnical investigation, and involved the collection of soil samples from 15 boreholes drilled at evenly spaced locations across the site. This is a sufficient number of sample locations to provide a preliminary screen of a 1.5 hectare site for potential soil contamination in accordance with OEH guidelines and the NEPM. The sample locations are shown on Figure 3.

Locations for soil sampling were identified based on the results of our site inspection and site history review, and the position of on-site facilities. Sample locations were referenced to existing ground features and positioned subject to on-site services, subsurface conditions and other constraints, which were encountered during fieldwork activities.

The samples were collected by a qualified and experienced environmental engineer. A description of all the samples collected is provided on the borehole logs in Appendix B.

5.8.2 Sample Handling & Equipment Decontamination

A drill rig equipped with solid augers was used to obtain the soil samples, and the samples were retrieved directly from the augers by hand using disposable gloves. No sample mixing was carried out to ensure volatile compounds that may be present are not lost. All sampling equipment was decontaminated prior to use and between sampling locations by washing with a mixture of water and DECON 90 and rinsing with potable water.

All jars were filled to the rim to minimize head space. The sample jars were then placed into ice-filled chests and transferred to the laboratory for analysis. Chain of Custody (COC) documentation was used to record and track the samples. COC documentation detailing the required analyses accompanied the samples to the laboratory. The environmental engineer signed the appropriate section of the COC form before providing the samples to the laboratory.

5.8.3 Analytical Program

The selection of analytes was based on the site history review, our observations made during our site inspection and OEH site assessment guidelines. The analytes for the soil samples included heavy metals, polycyclic aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPH), monocyclic aromatic hydrocarbons (MAH), volatile chlorinated hydrocarbons, polychlorinated biphenyls (PCB), organochlorine pesticides (OCP), organophosphorus pesticides (OCP), phenolic compounds, cyanide, fluoride and asbestos.

The analytical program for the soil samples is outlined in the COC documentation, which is provided in Appendix C. MGT-Labmark was selected as the primary laboratory, and ALS Laboratories was selected as the secondary laboratory for implementation of the field quality assurance program. Both MGT-Labmark and ALS are NATA accredited for the analyses performed.

5.8.4 Soil Vapour Survey

During the soil sampling program the concentrations of ionisable volatile organic compounds (VOCs) released from the soil matrix were measured using a photoionisation detector (PID). This provides a qualitative screen of the degree to which the soil samples may be impacted with VOCs. The PID was calibrated prior to use.

The PID readings obtained during the soil vapour survey are presented in the borehole log sheets (Appendix B). The concentration of ionisable vapours measured in the headspace above the soil samples ranged from 0.9 ppm to 10.5 ppm (v/v isobutylene equivalent), which are low and suggest that the soil is not impacted with VOCs.

5.9 Quality Assurance Program

Quality assurance (QA) of data was a key component of the contamination assessment in order to appraise the representativeness and integrity of samples and accuracy and reliability of the analytical results. This is in accordance with the NEPM and AS 4482.1-2005.

The QA procedures, actions and checks implemented during the investigation included:

- The utilisation of appropriate sampling methods in accordance with the OEH requirements, the NEPM and other key guidelines;
- Appropriate sample handling and transportation, and analysis of samples within recommended holding times;
- The collection and analysis of quality control (QC) samples;
- Implementation of internal laboratory QC analyses; and
- The use of National Association of Testing Authorities (NATA) registered laboratories (primary and secondary) and methods.

5.9.1 Quality Control Sampling

Inaccuracies in sampling and analytical programs can result from many causes, including collection of unrepresentative samples, cross contamination between samples, unanticipated interferences between elements during laboratory analyses, equipment malfunctions and operator error. Inappropriate sampling, preservation, handling, storage and analytical techniques can also reduce the precision and accuracy of results.

In order to address these potential data quality issues, a field-based QC program was undertaken to measure the effectiveness of the QA procedures by comparison with acceptance criteria. The NEPM has documented procedures for QC sampling and analysis to ensure that the required degree of accuracy and precision is obtained. The NEPM and the OEH recommend the use of two laboratories for the implementation of a field QC program in addition to the internal QC procedures followed by the laboratories, which are required in accordance with their NATA registration.

According to the NEPM the collection of intra and inter-laboratory duplicate samples is required, along with blank samples. Intra-laboratory and inter-laboratory samples are duplicates of primary samples that are collected in the field. Intra-laboratory samples are analysed by the primary laboratory and are used as a check on the precision of the sampling and analytical procedures. Inter-laboratory samples are analysed by a secondary laboratory and provide a check as to the accuracy of the analytical data. Field blank samples include rinsate blanks and trip blank samples.

Rinsate blanks are samples of water collected from field equipment after decontamination, and are used to determine the effectiveness of the decontamination procedures. Trip blanks are samples of deionised water prepared prior to sampling, and are stored and transported with the samples. They are used to identify laboratory errors or to identify sources of contamination due to sample storage and handling.

According to the NEPM a split of a minimum of 10% of the primary samples as field duplicate samples (5% inter-laboratory and 5% intra-laboratory) as well as blanks is required. Where less than 20 samples are to be analysed, a minimum of two field duplicate samples (one inter-laboratory and one intra-laboratory) and a blank is generally considered sufficient. Blanks are generally collected on each day that sampling is performed, and are analysed where necessary.

For this contamination assessment the following field quality control samples were collected and analysed:

- One intra-laboratory duplicate sample; and
- One inter-laboratory duplicate sample.

5.9.2 Quality Control Criteria

A check on the comparability of the field duplicate sample results is achieved by calculating the Relative Percent Difference (RPD). RPDs are calculated as the absolute value of the difference between the primary and duplicate sample results, divided by the average value, expressed as a percentage.

According to AS 4482.1-2005 (and referenced in the NEPM) RPDs below 50% are considered to demonstrate good correlation between duplicate sample results. However, AS 4482.1-2005 also states that the acceptable variation between results can be higher for organic analytes than for inorganics, and for low concentrations of analytes. In view of this, and based on STS's experience, RPDs up to 70% are considered to be acceptable for organic species. RPDs of 100% or more are generally considered to demonstrate poor correlation unless results are less than five times the laboratory detection limits.

5.9.3 Laboratory Quality Control

A laboratory QC program involves the preparation and analysis of their own duplicate samples, reagent blanks and control samples (where the analyte concentration is known) or matrix spikes. Duplicate samples are subjected to the same preparation and analytical procedures as primary samples. The laboratories are required to analyse matrix spikes or control samples at a minimum frequency of 5% of the total number of primary samples in each sample batch.

The results of method blanks, duplicates and control sample analyses are compared by the laboratory to established quality assurance criteria for data precision and accuracy. If the results do not meet the criteria, then the analyses should be repeated. The relevant criteria are:

- Method blanks should not return any positives on analysis;
- Duplicate samples should not vary by more than 35% from the mean result; and
- Control samples should generally give a recovery of 75-125%.

5.10 Assessment Criteria

The key criteria for assessing potentially contaminated sites in New South Wales are the Soil Investigation Levels (SILs), which are outlined in OEH's "Guidelines for the NSW Site Auditor Scheme, 2nd Edition" (DEC, 2006). The SILs have been adopted from Schedule B(1) of the National Environmental Protection Council document "National Environmental Protection (Assessment of Site Contamination) Measure 1999."

The SILs comprise Health-Based Investigation Levels (HILs) and the Phytotoxicity-Based Investigation Levels (PILs). The HILs are threshold values that are indicative of potential adverse impacts to human health, whilst the PILs are values that indicate a potential phytotoxic effect to plants for a sandy loam soil. It is noted that the SILs do not provide criteria for petroleum hydrocarbon compounds. In the absence of SIL criteria the 'threshold concentrations for a sensitive land use' (OEH Threshold Concentrations) outlined in OEH's "Guidelines for Assessing Service Station Sites" (EPA, 1994) are used, however, the HILs do provide threshold values for hydrocarbon fractions that may be adopted provided that speciation testing is undertaken for specific aromatic and aliphatic components.

There are four categories of HIL, which are each used to appraise the risks posed by site contamination for different land use settings. These include:

- **SIL (Column 1):** for a residential land use with gardens and accessible soil, including children's day care centres, preschools and primary schools.
- **SIL (Column 2):** for a residential land use with minimal opportunities for soil access, including high-rise apartments and flats
- **SIL (Column 3):** for parks, recreational open space, playing fields, including secondary schools
- **SIL (Column 4):** for a commercial/industrial land use.

Where the proposed land use will include more than one land use category (e.g. mixed residential/commercial development) the exposure setting of the most "sensitive" land use is adopted for the site.

5.10.1 Criteria For This Assessment

The majority of the site is covered with grasses and groves of trees and the property is currently being used as a meeting place for community organizations. In view of this, the SILs (Column 3) criteria, which are protective of human health for a recreational land use setting, are the most appropriate and have been adopted. Further, the site may be redeveloped for residential purposes in the future, however, the nature of residential development has not been confirmed. Therefore, both the SILs Column 1 and Column 2 criteria have been adopted, which are protective of human-health for standard residential and high-density residential land use settings respectively.

The OEH Threshold Concentrations have also been adopted for petroleum hydrocarbon compounds. In addition, the PILs have been used to evaluate the potential for adverse impacts to plants grown on the site.

5.11 Analytical Results And Interpretation

The analytical results for the soil samples are presented in the NATA endorsed laboratory reports included in Appendix C, and are summarised Appendix I. The results exceeding the assessment criteria are highlighted in the tables accordingly, and are discussed below

5.11.1 Evaluation Of Human Health Impacts

The results show that the concentrations of organic and inorganic species analysed for are generally low and well below the SILs Column 1, Column 2 and Column 3 criteria and the OEH Threshold Concentrations with the exception of lead and PAHs.

Elevated concentrations of lead (640 mg/kg to 7 300 mg/kg), total PAH (27 mg/kg) and the PAH species benzo(a)pyrene (1.1 mg/kg to 3.2 mg/kg) were measured in several samples of fill material retrieved from the bowling green area in the east of the site. These concentrations are above the SIL (Column 1) criteria for these analytes. The lead and benzo(a)pyrene concentrations in several samples are also above their respective SIL (Column 3) criteria. Further, the lead concentrations in two samples exceed the SILs (Column 2) criteria. That is, the site could potentially present a risk to human-health for the existing recreational use and also for high and low density residential land use settings where exposure pathways exist.

However, it should be noted that the samples in which the elevated lead and PAH concentrations were measured were collected from depths of greater than 1.5 m below the land surface, with the overlying soil containing substantially lower contaminant concentrations which are below the adopted assessment criteria. Therefore, the contaminated soil is not readily accessible to site users, although there is the potential that contract workers could be exposed to the lead and PAH impacted soil during any future bulk excavation of the site or during the installation or repair of below ground services such as power, water or communications.

5.11.2 Evaluation Of Environmental Impacts

The concentrations of lead (640 mg/kg to 7 300 mg/kg), mercury (1.2 mg/kg to 3.0 mg/kg) and zinc (220 mg/kg to 820 mg/kg) measured in the soil at a number of locations on the site are above the PILs for these metals of 600 mg/kg, 1 mg/kg and 200 mg/kg respectively. The PILs are criteria which are designed to be protective of plant health within an urban setting.

However, the PILs are extremely conservative and are often unrealistic. For example, some PILs are actually lower than the natural background concentrations of metals in Australian soils and there are many examples where healthy plant communities exist on

sites where the metals concentrations in the soil are significantly greater than the PIL criteria. For this reason the PILs should be treated with caution, and PIL exceedences should not be an immediate trigger for remediation.

With the exception of lead at one sample location (BH13), the concentrations of lead, mercury and zinc in the soil do not substantially exceed their PIL criteria. Also, the elevated concentrations of lead at location BH13 are located below a depth of 1.5 m and would therefore not be accessible to the root systems of the many. Further, the vegetation growing on the site appears to be in a health condition and does not exhibit any signs of phytotoxic stress. Therefore, the soils on the site are not considered to present a significant risk to plant health despite the PIL exceedences.

5.11.3 Risk Of Groundwater Impacts

The concentrations of chemical contaminants measured in the soil on the site are generally low and below levels that would present a significant risk to groundwater. Further, the contaminants of concern, namely PAHs and lead, are characterized by a low solubility. In view of these factors, it is considered unlikely that the site has contributed to any unacceptable groundwater impacts.

5.11.4 Potential For Off-Site Migration Of Contamination

As the concentrations of chemical contaminants in the near surface soil on the site are low, off-site migration of contamination as a result of surface runoff or wind action is not expected to have occurred. Also, as groundwater impacts due to the site are considered unlikely, the off-site migration of chemically impacted groundwater is not likely to have occurred.

5.11.5 Assessment Outcomes

Based on the results of this preliminary contamination assessment, the soils on the site would not present an immediate and unacceptable risk to human-health for an ongoing recreational use and also for standard and high density residential uses provided that the existing land surface levels are retained and that an Environmental Management Plan (EMP) is also prepared. The purpose of the EMP is to protect site workers from being exposed to the lead and PAH impacted fill on the site during future subsurface works. Alternatively, the risks posed by the lead and PAH contamination would need to be negated by undertaking active remedial works to remove the chemically impacted fill.

However, prior to redevelopment further soil sampling is recommended in order to confirm that the soil impacts at the site are not more extensive than the preliminary assessment results suggest. That is, a detailed site investigation or 'phase two' assessment is recommended. Further, in view of the elevated concentrations of contaminants in the fill on the site, the fill could not be beneficially reused and substantial landfill disposal costs could potentially be incurred if large volumes of soil were required to be removed from the site.

5.12 Evaluation Of Quality Assurance

5.12.1 Field Duplicate Sample Results

The results of the field intra and inter-laboratory duplicate sample analyses are compared to those of the corresponding primary samples in Table B. The results show that the variations between the primary and duplicate sample results are below the allowable Relative Percentage Difference (RPD) criteria of 50% for inorganic species and 70% for organic analytes in all but four of the 67 comparable data sets, which is an acceptable rate of correlation.

The discrepancies encountered are expected to be due to the heterogeneous distribution of the contaminants within fill material. Further, the contaminant concentrations in both the primary and duplicate samples have been used in the data set from which our conclusions have been made. Therefore, the RPD discrepancies do not affect the outcome of the assessment.

5.12.2 Laboratory Quality Control Program

Our review of the laboratory's internal QC program has shown that the majority of internal duplicate samples, spike recoveries, surrogate standards and laboratory blanks were within the laboratories' recommended range for acceptable reproducibility. Therefore, STS considers the laboratory data obtained in the sampling program to be of acceptable precision, accuracy and reliability and representative of the site conditions encountered.

5.12.3 Procedure Based Quality Control

An appraisal of the key procedure-based quality control aspects of the investigation are summarized in Table 4 below.

Item	Compliance	Reference / Comments
Appropriate sampling methods adopted?	Yes	Refer to Sections 5.8.1 and 5.8.2
Appropriate sample handling and transportation procedures implemented?	Yes	Refer to Sections 5.8.1 and 5.8.2 and COC documentation in Appendix C
Samples analysed within recommended laboratory holding times?	Yes	Refer to COC documentation in Appendix C and laboratory reports in Appendix C
NATA accredited laboratory testing methods used?	Yes	Refer to laboratory reports in Appendix C

5.13 Conclusions And Recommendations

- The site remained vacant and undeveloped land until the 1950s when bowling greens were constructed on the property. The site was subsequently occupied by a ladies bowling club until the mid 1990s, after which time the bowling activities ceased and the property has since been used by community organizations.
- The results of the soil sampling program performed for this assessment show that the concentrations of chemical contaminants measured in the soil samples retrieved from the site are generally low and below criteria that are protective of human-health for recreational and also standard and high-density residential land use settings. However, the fill in the east of the site below 1.5 m depth has been found to be impacted with lead and PAHs at concentrations which exceed these health-based criteria. That is, the site could present a potential risk to human-health for these land use settings where exposure pathways exist.
- The lead and PAH impacted soil is located at a depth which would render it generally inaccessible to site users. Therefore, the site appears to be suitable for an ongoing recreational/community use and also for a residential use provided that the existing land surface levels are retained and that an Environmental Management Plan (EMP) is also prepared. The purpose of the EMP is to protect site workers

from being exposed to the lead and PAH impacted fill on the site during future subsurface works. Alternatively, the risks posed by the lead and PAH contamination would need to be negated by undertaking active remedial works to remove the chemically impacted fill from the site.

- The results of the assessment also show that the site is not expected to be the source of any unacceptable groundwater impacts, and the soils on the site are unlikely to present a risk to plant health.
- Prior to redevelopment further soil sampling is recommended in order to confirm that the soil impacts at the site are not more extensive than the preliminary assessment data suggests. That is, a detailed site investigation or 'phase two' assessment is recommended.
- In view of the elevated concentrations of contaminants in the fill on the site, the fill could not be beneficially reused and substantial landfill disposal costs could potentially be incurred if large volumes of soil were required to be removed from the site during redevelopment.

6 GEOTECHNICAL DESIGN PARAMETERS

6.1 General

Geotechnical parameters relevant to design of pavement, embankments, cuttings and structural foundations have been recommended based on available laboratory and field test results, published data and relevant past experience.

The field tests carried out include:

- Standard Penetration Test (SPT); and
- Pocket Penetrometer.

The laboratory tests carried out include:

- Moisture content;
- Atterberg Limits and Linear Shrinkage;
- Particle size distribution;
- Environmental sampling and testing.

It should be noted that the purpose of the site investigations (including field and laboratory tests) is to interpret the subsurface conditions whereas the design parameters are generally derived from in-situ and laboratory tests incorporating published data and experiences in accordance with the soil densities/consistencies and rock classes.

Based on the available geotechnical investigation and laboratory test results, together with past experience and published information, recommended geotechnical parameters for the design of pavement, embankments, cuttings and structural foundations have been derived.

The available geotechnical information and test results that substantiate the recommended geotechnical parameters are presented in the following sections. For convenience and clarity, the test results are presented in a separate figure for each soil density (very loose to very dense) or consistency (very soft to hard) in order to provide an apparent estimation. Note that the recommended design values may be adjusted by the geotechnical designers based on the test results as appropriate.

6.2 Strength Parameters

Strength parameters include undrained shear strength (c_u) for cohesive materials and the effective friction angle (ϕ') and cohesion (c') for both cohesive and non-cohesive materials.

6.2.1 Cohesive Materials

For cohesive materials, short term stability is governed by undrained shear strength c_u , which can be derived from SPT and Pocket Penetrometer tests. When cohesive materials are subjected to permanent or long term conditions the effective strength parameters, i.e. cohesion (c') and friction angle (ϕ'), shall be used.

Cohesive materials are classified into six consistencies for geotechnical design purposes. The undrained shear strength is one of the most widely used parameters for determining the consistencies of cohesive materials. The typical range of c_u values for each

consistency adopted for this project is defined in Table 5.1 below. The lower bound value of the undrained shear strength of each clay consistency is generally recommended.

Table 5.1: Adopted undrained shear strength of cohesive soils

Consistency	Typical c_u range (kPa)	Recommended value for design (kPa)
Very Soft	0 – 12	5
Soft	12 – 25	12
Firm	25 – 50	25
Stiff	50 – 100	50
Very Stiff	100 – 200	100
Hard	> 200	200

6.2.2 Cohesionless materials

For non-cohesive materials, effective strength parameters, c' and ϕ' , are adopted. The friction angles of sands have been derived based on past experience and published data.

It is reasonable to assume the cohesion c' of cohesionless materials as zero. The recommended friction angles for sands are presented in Table 5.2 below.

Table 5.2: Adopted friction angles for sands

Density	Friction angle ϕ' (degrees)
Very Loose	25
Loose	27
Medium Dense	30
Dense	35
Very Dense	38

6.3 Soil and Rock Unit Weights

SMEC did not carry out any testing for determination of bulk density of the materials. The bulk density parameters of the soils and rocks have therefore been derived from published data and past experience.

6.3.1 Soil Unit Weight

The bulk density values for soils suggested in Table 5.3 were obtained from published data (e.g. Djoenaidi, Winda J, 1985 and Das, B, 2002) and relevant experiences from past projects.

Table 5.3 Adopted Soil Unit Weight

Material	Consistency	Recommended bulk unit weight (kN/m ³)
Silts/Clays	Very Soft	16
	Soft	17
	Firm	18
	Stiff	19
	Very Stiff	20
	Hard	21
Sands & Poorly Sorted Gravels	Very Loose	16
	Loose	18
	Medium Dense	18
	Dense	18
	Very Dense	20
Fill Materials	Poorly Compacted	15
	Moderately Compacted	17
	Well Compacted	19

6.3.2 Rock Unit Weight

The rock unit weight typically relates to rock types and rock classes. Typical values recommended for this project are presented below in Table 5.4:

Table 5.4: Rock Unit Weights

Material	Class	Recommended bulk unit weight (kN/m ³)
Sandstone	Sandstone – 5	22
	Sandstone – 4	23
	Sandstone – 3	24

6.4 Rock Parameters For Deep And Shallow Foundation Design

It is recommended that the design of structural foundations be based on an evaluation of intact rock strength i.e. UCS and defect spacing as per Pells et al. (1993). Estimates of encountered rock strength were made by assessing the resistance to drilling together with laboratory testing of recovered rock chips. Recommended end bearing pressures and shaft adhesions are given below in Table 5.6, which are in accordance with established practice (e.g. Pells et al., 1993; 1998 and Bowles, 1997)

Table 5.6: Foundation Design Parameters for Rock

Estimated Strength	Class	Ultimate End Bearing (MPa) ¹	Serviceability End Bearing Pressure (kPa) ²	Ultimate Shaft Adhesion (kPa) ³
Very Low	V	1	600	60
Low	IV	5	1500	150
Medium	III	10	5000	350

Notes:

1. Ultimate values occur at large settlements (> 5% of minimum footing dimensions)
2. End bearing pressure to cause settlement of <1% of minimum footing dimension.
3. Clean socket of roughness category R2 or better.

6.5 Spring Constants

Spring constant is generally used for structural design and can be approximately estimated from the elastic modulus of soil. Proposed spring constants, k, are derived based on Hong Kong Geoguide 1 (Guide to retaining wall design 1994):

- For clays, $k \text{ (kPa/m)} = 2E' \text{ (kPa)}$.
- For sands, $k \text{ (kPa/m)} = 1E' \text{ (kPa)}$.

Spring constant values calculated from the equations above fall within the expected range as repeated by Bowles (1997). For rocks, the adopted spring constant values have also been derived based on past experience (presented in Table 5.7 below).

Table 5.7: Recommended Rock Spring Constant Values

Class	K (kPa/m)
V	80,000
IV	100,000
III	700,000

Note: *The spring constant values above are specific for the ground and bedding conditions

7 GEOTECHNICAL DESIGN CONSIDERATIONS

This section describes the geotechnical design considerations relevant to the proposed works.

7.1 Site preparation

It is likely that the car park adjacent to the Upper Bowling Green level is the most suitable site access point for construction and excavation equipment. Prior to excavations commencing on site a thorough search should be undertaken for buried services, and where required these services should be re-located clear of the proposed works. No significant clearing is expected to be required however minor re-grading and profiling may be required to permit suitable site access to the upper level.

Prior to works commencing it is recommended that a full dilapidation report be undertaken for adjacent properties, particularly the Music and Cultural Centre and residential apartments at 268-270 Longueville Road.

It is recommended that the vegetation covering the retaining wall between the upper and lower levels be cleared and that an engineering assessment be made of this retaining wall prior to works proceeding.

7.2 Site Excavation

Based on the subsurface conditions encountered, it is expected that excavation on this site will encounter fill materials overlying residual soils and sandstone bedrock.

A large well maintained excavator without assistance should be able to remove fill materials, residual soils and very low to low strength bedrock. Excavation of low strength of better bedrock will required ripping and or rock breaking. Should excavations need to proceed below the interpreted level of low strength bedrock particular care will be required to ensure that buildings or other developments on adjacent properties are not damaged when excavating the rock. Structures on adjacent properties may be founded on rock and hence susceptible to damage from vibration.

Excavations methods should be adopted which limit ground vibrations at the adjoining developments to not more than 10 mm/sec. Vibration monitoring may be required to verify that this is achieved. However, if the contractor adopts methods and/or equipment in accordance with the recommendations in Table 5.7 for a ground vibration limit of 5 mm/sec, vibration monitoring may not be required.

The limits of 5 mm/sec and 10 mm/sec are expected to be achievable if rock breaker equipment or other excavation methods are restricted as indicated in Table 5.7.

Table 5.7: Recommendations for rock breaking equipment

Distance from adjoining structure (m)	Maximum Peak Particle Velocity 5 mm/sec		Maximum Peak Particle Velocity 10 mm/sec*	
	Equipment	Operating Limit (% of Maximum Capacity)	Equipment	Operating Limit (% of Maximum Capacity)
1.5 – 2.5	Hand operated jackhammer only	100	300 kg rock hammer	50
2.5 – 10.0	300 kg rock hammer	50	300 kg rock hammer	10
			or 600 kg rock hammer	50
5.0 – 1.0	300 kg rock hammer	100	600 kg rock hammer	100
	or 600 kg rock hammer	50	or 900 kg rock hammer	50

* Vibration monitoring is recommended for 10 mm/sec vibration limit.

At all times, the excavation equipment must be operated by experienced personnel, according to the manufacturer's instructions and in a manner consistent with minimising vibration effects.

Use of other techniques (eg. grinding, rock sawing), although less productive, would reduce or possibly eliminate risks of damage to property through vibration effects transmitted via the ground. Such techniques may be considered if an alternative to rock breaking is necessary.

If rock sawing is carried out around excavation boundaries in not less than 1 metre deep lifts, a 900 kg rock hammer could be used at up to 100% maximum operating capacity with an assessed peak particle velocity not exceeding 5 mm/sec, subject to observation and confirmation by a geotechnical engineer at the commencement of excavation.

Saw cutting should be carried out around the perimeter of the excavation before any rock breaking is commenced. It would be appropriate before commencing excavation to undertake a dilapidation survey of any adjacent structures that may potentially be damaged. This will provide a reasonable basis for assessing any future claims.

In our opinion, unless the slopes in the soils and extremely low strength rock can be battered at a slope of 1 to 1, it will be necessary to provide temporary support. Reinforced concrete piles with shotcrete infill are probably the most cost-effective option for providing this support. The piles may be drilled and fixed into the material below the base of the excavation.

When considering the design of the supports, it will be necessary to allow for the ground surface slope, loading from adjacent structures and water pressure. Where the nearby structures are within the zone of influence of the excavation, it will be necessary to adopt K_0 conditions when designing the temporary support. Anchors or props can be used to

provide the required support. If anchors extend into adjoining properties, it will be necessary to obtain the permission of the property owners. When props or anchors are used for support, a rectangular earth pressure distribution should be adopted on the active side of the support. The permanent basement support should be designed assuming K_0 conditions.

7.3 Shallow And Deep Footings

The in-situ sandstone is assessed to be Class V or better. Pad/strip footings founded on this material may be proportioned using an allowable bearing pressure of 0.6 MPa. Silty clays may be present in parts of the base of the excavation. In these areas, piers should be used to transfer the loads to the underlying weathered sandstone. Piers founded at least 2.0 metres into the weathered sandstone may be proportioned using an allowable end bearing pressure of 1.5 MPa.

The base of all footings must be cleaned after excavation and inspection but before the concrete is placed. Footings should be inspected by an experienced engineer.

7.4 Groundwater

There is the possibility that there will be some groundwater seepage into basement excavations in the long term. Some form of sump and pump will be required to control this. Allowance must be made for seepage into the excavation during construction. It is again likely that a temporary sump and pump will be sufficient.

7.5 Temporary And Permanent Embankment And Cut Slopes

Should temporary batters be required a maximum temporary batter slope of 1.5(H):1(V) is recommended for cuts up to 3 m in height in cohesive soils and fill comprising weathered rock. A maximum temporary batter slope of 2.0(H):1(V) is recommended for cuts greater than 3 m in height in the same materials.

Permanent batters should be no steeper than 3(H):1(V) and should be covered with appropriate vegetation to reduce the risk of erosion and dispersion of the clayey soils.

The short-term stability of batter slopes in rock will be primarily dependent on the dip angles of bedding, foliations and discontinuities within the rock mass. Temporary excavations parallel to the strike and acute to the dip can probably be cut at the dip angles present in the rock mass providing any wedges are assessed and stabilised (or removed) during excavation works. Temporary excavations normal to the strike or away from the dip will need to be battered at a slope of 1(H):1(V).

Steep permanent batters in rock will probably require surface protection with shotcrete to reduce the occurrence of spalling and erosion over time.

7.6 Further Investigations

The current investigation is limited to auger drilling only with no coring of bedrock. Should greater certainty on the excavatability or foundation design parameters for the bedrock be required it is recommended that further investigations be undertaken. These investigations should include, as a minimum, at least 4 cored boreholes per level (excluding car park area). Cored boreholes should penetrate at least 2m below the base of proposed excavation or twice the diameter below the depth of the proposed foundation (i.e. should

900mm diameter bored piers be required, investigations should proceed a minimum 1800mm below the toe of the proposed pier).

Groundwater monitoring well should be installed in at least 2 boreholes per level to accurately undertake long term ground water monitoring as to accurately predict flow or seepage rates in the base of excavations/foundations.

8 REFERENCES

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GEOTECHNICAL LOG OF NON-CORE DRILLHOLE AND EXCAVATION SHEET

(These notes explain the terms and abbreviations used on the log sheets)

GENERAL

Information obtained from excavation and drilling investigations is recorded on log sheets. The “Geotechnical Log of Non-core Drillhole” presents data from drilling operations where a core barrel has not been used to recover material and information is based on a combination of regular sampling and insitu testing. The “Geotechnical Log of Excavation” presents data obtained on the subsurface profile from observations of excavations, either natural or man-made.

The heading of the log sheets contains information on client and project identification, hole or pit identification, location and elevation. Details of the drilling contractor, equipment, drilling or excavation dates, and of the personnel responsible for the preparation of log, are given at the bottom of the sheet. The main section of the log contains information on drilling or excavation methods and conditions, material substance description, details of insitu tests and additional observations, presented as a series of columns plotted with reference to length in metres below the ground surface. The “Geotechnical Log of Excavation” contains a squared section for a scaled, graphical presentation of the typical excavation profile.

As far as is practicable the data contained on the log sheets is factual. Some interpretation is inevitable in the assessment of conditions between samples and of the origin of the materials. Material description and classification is generally based on Geotechnical Site Investigation Code AS1726-1993.

Column 1 – Method

N	Natural exposure
E	Existing excavation
BH	Backhoe bucket
EX	Excavator bucket (large tracked machine)
BB	Bulldozer blade
BR	Bulldozer ripper
HA	Hand auger
AS	Auger screwing
ADV	Auger drilling with V bit
ADT	Auger drilling with TC bit
WR	Washbore drilling with roller bit
WD	Washbore drilling with drag or blade
RC	Reverse circulation

Column 2 – Support

C	Steel or PVC casing
M	Drilling mud
T	Timber

Column 3, 4 & 5 – Rate of Penetration

F	Fast
M	Medium
S	Slow
R	Refusal

Column 6 – Water

- ⏏ Groundwater level with date.
- ▶ Groundwater inflow at the level marked.
- ◀ Loss of drilling fluid at the level marked.

Column 7 – Sample

Sections sampled bounded by lines across column.

D	Disturbed sample
B	Bulk disturbed sample
S	Standard penetration test sample
U50	Undisturbed sample (50 mm diameter)

Column 8 – Elevation/depth

Depth is length in metres below the ground surface.

Elevation is vertical height in metres above datum.

Column 9 – Graphic Log

Material types indicated by standard symbols.

Column 10 – Classification Symbol

Standard symbol in accordance with the Unified Soil Classification System.

Column 11 – Description

Material substance is described as NAME, grain-size, plasticity, colour, fabric and minor components.

TERM	GRAIN SIZE
Boulders	>200
Cobbles	60 – 200
Gravel	2 – 60
Sand	0.06 – 2
Silt	0.002 – 0.06
Clay	<0.002

Column 12 – Moisture

D	Dry
M	Moist – no free water on remoulding
W	Wet – free water on remoulding

Column 13 – Density Index

Symbol	Term	Average SPT	Density Index
VL	very loose	0 – 3	< 15%
L	loose	3 – 8	15 – 35%
MD	medium dense	8 – 25	35 – 65%
D	dense	25 – 52	65 – 85%
VD	very dense	>42	>85%

Column 14 – Consistency

Symbol	Term	Qu in kPa
VS	very soft	< 25
S	soft	25 – 50
F	firm	50 – 100
St	stiff	100 – 200
VSt	very stiff	200 – 400
H	hard	> 400
Fr	friable	

Column 15 – Type

S	Standard penetration test
V	Vane shear
PP	Hand penetrometer
P	Pressuremeter
W	Permeability
MC	Field moisture content
LL	Liquid limit
PL	Plastic limit
PI	Plasticity index
LS	Linear Shrinkage
UC	Unconfined compression

Column 16 – Result

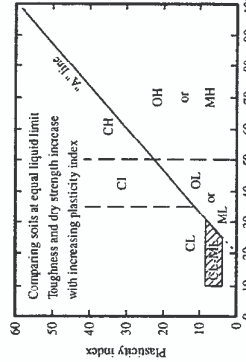
The results of the tests identified in Column 13 are included in Column 14.

Column 17 – Additional Observations

Information on the structure of the material and an assessment of the possible origin of the material.

Unified soil classification (including identification and description)

Field identification procedures (Excluding particles larger than 75mm and basing fractions on estimated weights)				Typical names	Information required for describing soils	Laboratory classification criteria
<p>Coarse grained soils More than half of material is larger than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Gravels More than half of coarse fraction is larger than 2.5mm</p> <p>Clean gravels (little or no fines)</p>	<p>Wide range of grain sizes and substantial amounts of all intermediate particle sizes</p>	<p>GW</p>	<p>Well graded gravels, gravel-sand mixtures, little or no fines</p>	<p>Give typical names; indicate approximate percentages of sand and gravel; maximum size; angularity; surface condition; and hardness of the coarse grains; local or geological name and other pertinent descriptive information and symbol in parentheses.</p>	<p>Determine percentages of gravel and sand from grain size curve Depending on percentages of fines (fraction smaller than .075mm sieve size) coarse grained soils are classified as follows GM, GC, SM, SC Less than 5% More than 12% 5% to 12%</p>
<p>Sands More than half of coarse fraction is smaller than 2.5mm</p> <p>Clean sands (little or no fines)</p>	<p>Gravels with fines (appreciable amount of fines)</p>	<p>Plastic fines (for identification procedures see CL below)</p>	<p>GC</p>	<p>Clayey gravels, poorly graded gravel-sand-silt mixtures</p>	<p>For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.</p>	<p>Not meeting all gradation requirements for GW Atterberg limits below "A" line or PI less than 4 Atterberg limits above "A" line with PI greater than 7 symbols</p>
<p>Sands More than half of coarse fraction is smaller than 2.5mm</p> <p>Clean sands (little or no fines)</p>	<p>Gravels with fines (appreciable amount of fines)</p>	<p>Plastic fines (for identification procedures see CL below)</p>	<p>SW</p>	<p>Well graded sands, gravelly sands, little or no fines</p>	<p>For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.</p>	<p>Not meeting all gradation requirements for SW Atterberg limits below "A" line or PI less than 4 Atterberg limits above "A" line with PI greater than 7 symbols</p>
<p>Sands More than half of coarse fraction is smaller than 2.5mm</p> <p>Clean sands (little or no fines)</p>	<p>Gravels with fines (appreciable amount of fines)</p>	<p>Plastic fines (for identification procedures see CL below)</p>	<p>SP</p>	<p>Poorly graded sands, gravelly sands, little or no fines</p>	<p>For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.</p>	<p>Not meeting all gradation requirements for SP Atterberg limits below "A" line or PI less than 4 Atterberg limits above "A" line with PI greater than 7 symbols</p>
<p>Sands More than half of coarse fraction is smaller than 2.5mm</p> <p>Clean sands (little or no fines)</p>	<p>Gravels with fines (appreciable amount of fines)</p>	<p>Plastic fines (for identification procedures see CL below)</p>	<p>SM</p>	<p>Silty sands, poorly graded sand-silt mixtures</p>	<p>For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.</p>	<p>Not meeting all gradation requirements for SM Atterberg limits below "A" line or PI less than 4 Atterberg limits above "A" line with PI greater than 7 symbols</p>
<p>Sands More than half of coarse fraction is smaller than 2.5mm</p> <p>Clean sands (little or no fines)</p>	<p>Gravels with fines (appreciable amount of fines)</p>	<p>Plastic fines (for identification procedures see CL below)</p>	<p>SC</p>	<p>Clayey sands, poorly graded sand-clay mixtures</p>	<p>For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.</p>	<p>Not meeting all gradation requirements for SC Atterberg limits below "A" line or PI less than 4 Atterberg limits above "A" line with PI greater than 7 symbols</p>
<p>Fine grained soils More than half of material is smaller than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Silts and clays greater than liquid limit</p>	<p>Dry strength crushing character-istics</p>	<p>ML</p>	<p>Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity</p>	<p>Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geological name, and other pertinent descriptive information, and symbol in parentheses</p>	<p>Use grain size curve in identifying the fractions as given under field identification</p>
<p>Fine grained soils More than half of material is smaller than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Silts and clays less than 50</p>	<p>Dilatancy (reaction to sticking)</p>	<p>CL, CI</p>	<p>Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays</p>	<p>For undisturbed soils add information on structure, stratification, consistency and undisturbed and remoulded states, moisture and drainage conditions</p>	<p>Plasticity chart for laboratory classification of fine grained soils</p>
<p>Fine grained soils More than half of material is smaller than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Silts and clays greater than liquid limit</p>	<p>Medium to high</p>	<p>OL</p>	<p>Organic silts and organic silts of low plasticity</p>	<p>For undisturbed soils add information on structure, stratification, consistency and undisturbed and remoulded states, moisture and drainage conditions</p>	<p>Plasticity chart for laboratory classification of fine grained soils</p>
<p>Fine grained soils More than half of material is smaller than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Silts and clays greater than liquid limit</p>	<p>Medium to high</p>	<p>MH</p>	<p>Inorganic silts, micaceous or dictomaceous fine sandy or silty soils, elastic silts</p>	<p>For undisturbed soils add information on structure, stratification, consistency and undisturbed and remoulded states, moisture and drainage conditions</p>	<p>Plasticity chart for laboratory classification of fine grained soils</p>
<p>Fine grained soils More than half of material is smaller than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Silts and clays greater than liquid limit</p>	<p>High</p>	<p>CH</p>	<p>Inorganic clays of high plasticity, fat clays</p>	<p>For undisturbed soils add information on structure, stratification, consistency and undisturbed and remoulded states, moisture and drainage conditions</p>	<p>Plasticity chart for laboratory classification of fine grained soils</p>
<p>Fine grained soils More than half of material is smaller than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Silts and clays greater than liquid limit</p>	<p>Medium to high</p>	<p>OH</p>	<p>Organic clays of medium to high plasticity</p>	<p>For undisturbed soils add information on structure, stratification, consistency and undisturbed and remoulded states, moisture and drainage conditions</p>	<p>Plasticity chart for laboratory classification of fine grained soils</p>
<p>Fine grained soils More than half of material is smaller than .075mm sieve size</p> <p>The .075mm sieve size is about the smallest particle visible to the naked eye</p>	<p>Silts and clays greater than liquid limit</p>	<p>None to very high</p>	<p>PT</p>	<p>Peat and other highly organic soils</p>	<p>For undisturbed soils add information on structure, stratification, consistency and undisturbed and remoulded states, moisture and drainage conditions</p>	<p>Plasticity chart for laboratory classification of fine grained soils</p>



NOTES RELATING TO GEOTECHNICAL REPORTS

Introduction

These notes have been provided to outline the methodology and limitations inherent in geotechnical reporting. The issues discussed are not relevant to all reports and further advice should be sought if there are any queries regarding any advice or report.

Geotechnical Reports

Geotechnical reports are prepared by qualified personnel on the information supplied or obtained and are based on current engineering standards of interpretation and analysis.

Information may be gained from limited subsurface testing, surface observations, previous work, and is supplemented by knowledge of the local geology and experience of the range of properties that may exhibited by the materials present. For this reason geotechnical reports should be regarded as interpretative rather than factual documents, limited to some extent by the scope of information on which they rely.

Where the report has been prepared for a specific purpose (e.g. design of a three storey building), the information and interpretation may not be appropriate if the design is changed (e.g. a twenty storey building). In such cases, the report and the sufficiency of the existing work should be reviewed by SMEC in the light of the new proposal.

Every care is taken with the report content, however, it is not always possible to anticipate or assume responsibility for the following conditions:

- Unexpected variations in ground conditions. The potential for this depends on the amount of investigative work undertaken.
- Changes in policy or interpretation by statutory authorities
- The actions of contractors responding to commercial pressures

If these occur, SMEC would be pleased to resolve the matter through further investigation, analysis or advice.

Unforeseen Conditions

Should conditions encountered on site differ markedly from those anticipated from the information contained in the report, SMEC should be notified immediately. Early identification of site anomalies generally

results in any problems being more readily resolved and allows re-interpretation and assessment of the implications for future work.

Subsurface Information

Logs of a borehole, recovered core, test pit, excavated face, or cone penetration test are an engineering and/or geological interpretation of the subsurface conditions. The reliability of the logged information depends on the drilling/testing method, sampling/observation spacing's and the ground conditions. It is not always possible or economic to obtain continuous high quality data. It should also be recognised that the volume of material observed or tested is only a fraction of the total subsurface profile.

Interpretation of subsurface information and application to design and construction must take into consideration the spacing of the test locations, the frequency of observations and testing, and the possibility that geological boundaries may vary between observation points.

Groundwater observations and measurements outside of specially designed and constructed piezometers should be treated with care for the following reasons:

- In low permeability soils groundwater may not seep into an excavation or bore in the short time it is left open.
- A localised perched water table may not represent the true watertable.
- Groundwater levels vary according to rainfall events or season.
- Some drilling and testing procedures mask or prevent groundwater inflow.

The installation of piezometers and long term monitoring of groundwater levels may be required to adequately identify groundwater conditions.

Supply of Geotechnical Information for Tendering Purposes

It is recommended tenderers are provided with as much geological and geotechnical information that is available, and that where there are uncertainties regarding the ground conditions, prospective tenderers should be provided with comments discussing the range of likely conditions in addition to the investigation data.

FIGURE 1 – SITE LOCALITY PLAN

FIGURE 2 – SITE GEOLOGICAL PLAN

LEGEND



Site Location

Sydney 100k - Rock Unit

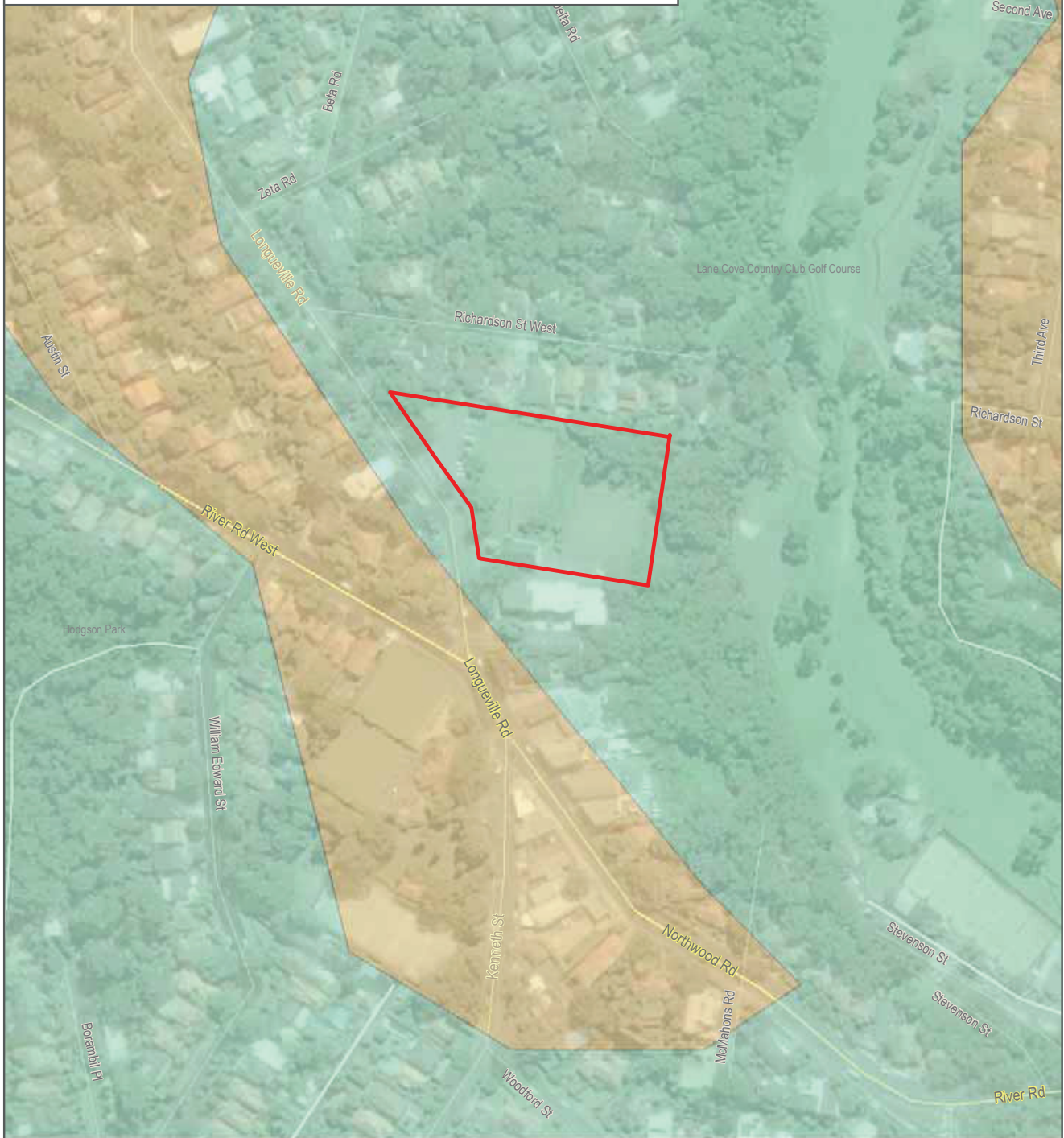
Symbol | Formation | Lithology



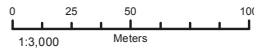
Rwa | Wianamatta Group | Black to dark grey shale and laminate



Rh | Medium to coarse grained quartz sandstone, very minor shale and laminate lenses



DATE 01/12/2011



PAGE SIZE A4

COORDINATE SYSTEM
GDA 94 MGA 56

FIG NO. 2

FIGURE TITLE Geology Map

PROJECT NO. 30011131

PROJECT TITLE 266 Longueville Road GI

CREATED BY PR11334

SOURCES Vector Backdrop - Roadnet © Map Data Services 2011. Aerial Imagery © Bing 2011.
Geology - Digital copy of Sydney 1:100 000 Geological Sheet 9130, 1st edition. Geological Survey
of New South Wales, Sydney. (1983)



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FIGURE 3 – BOREHOLE LOCATION PLAN




DATE 01/12/2011	0 5 10 20 1:750 Meters	PAGE SIZE A4	COORDINATE SYSTEM GDA 94 MGA 56	 © SMEC Australia Pty Ltd 2011. All Rights Reserved <small>Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, this map contains data from a number of sources - no warranty is given that the information contained on this map is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of all information prior to using it. This map is not a design document.</small>
FIG NO. 3	FIGURE TITLE Borehole Plan			
PROJECT NO. 30011131	PROJECT TITLE 266 Longueville Road GI			
CREATED BY PR11334	SOURCES Vector Backdrop - Roadnet © Map Data Services 2011. Aerial Imagery © Bing 2011.			

FIGURE 4 – SECTION LINE PLAN



DATE 01/12/2011		<div><div><div>0</div><div>5</div><div>10</div><div>20</div></div><div>1:750 Meters</div></div>		PAGE SIZE A4		COORDINATE SYSTEM GDA 94 MGA 56	
FIG NO. 4		FIGURE TITLE Section Lines					
PROJECT NO. 30011131		PROJECT TITLE 266 Longueville Road GI					
CREATED BY PR11334		SOURCES Vector Backdrop - Roadnet © Map Data Services 2011. Aerial Imagery © Bing 2011.					



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APPENDIX A – SITE PHOTOS



Upper car park level with mixed surface



Drilling Activities on Upper Bowling Green



Music and Culture Centre adjacent to BH9



Upper Bowling Green looking east



Dense vegetation obscuring retaining wall



Sandstone bedrock outcropping on Lower Bowling Green adjacent to BH4



Minor brick retaining wall on western boundary of Upper Bowling Green



Looking east from Lower Bowling Green



Dense vegetation covering slope between Upper and Lower Bowling Green



Looking east down slope to golf course from eastern boundary of Lower Bowling Green

APPENDIX B – BOREHOLE LOGS AND CORE PHOTOS

HOLE NO : BH1

FILE / JOB NO : 30011131

SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH2

PROJECT : 266 Longueville Road, Lane Cove GI

CLIENT : Lane Cove Council

FILE / JOB NO : 30011131

LOCATION : Car Park

FEATURE : Bowling Green

SHEET : 1 OF 1

POSITION : E: 330825.156, N: 6256047.893 (56 MGA94)

SURFACE ELEVATION : 56.000 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : Edson 3000

MOUNTING : Truck

CONTRACTOR : BHC Drilling

DRILLER : C.W

DATE STARTED : 10/11/11

DATE COMPLETED : 10/11/11

DATE LOGGED : 10/11/11

LOGGED BY : A.G

CHECKED BY : M.G

DRILLING						MATERIAL				
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER									
AD/T		F		ES 0.20m	56.0	0.0	Sandy GRAVEL medium to coarse grained, grey brown, (Roadbase)	D		FILL
		M		0.50m ES 0.70m			SANDSTONE fine to medium grained, grey orange, estimate very low to low strength becoming low to medium strength at 0.7m			WEATHERED ROCK 0.20: Very Low TC Bit Resistance 0.70: Moderate TC Bit Resistance
		H			55.0	1.0				
						1.50m	BOREHOLE BH2 TERMINATED AT 1.50 m Target depth			
					54.0	2.0				
					53.0	3.0				
					52.0	4.0				
					51.0	5.0				
					50.0	6.0				
					49.0	7.0				

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

SMEC AUSTRALIA



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH3

PROJECT : 266 Longueville Road, Lane Cove GI
LOCATION : Upper

CLIENT : Lane Cove Council
FEATURE : Bowling Green

FILE / JOB NO : 30011131
SHEET : 1 OF 1

POSITION : E: 330842.726, N: 6256055.884 (56 MGA94)

SURFACE ELEVATION : 55.200 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : Edson 3000

MOUNTING : Truck

CONTRACTOR : BHC Drilling

DRILLER : C.W


DATE STARTED : 11/11/11

DATE COMPLETED : 11/11/11

DATE LOGGED : 11/11/11

LOGGED BY : A.G

CHECKED BY : M.G

DRILLING					MATERIAL							
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER											
<div>↑ AD/T ↓</div>		E		ES	55.0	0.0			Silty SAND fine to medium grained, brown, with gravels from 0.2-0.4m	D		TOPSOIL
			0.20m			0.40m						
		M		0.50m					SANDSTONE fine to medium grained, grey orange, estimate very low to low strength			WEATHERED ROCK 0.40: Very Low TC Bit Resistance
			0.70m			1.0						
					54.0	1.50m			BOREHOLE BH3 TERMINATED AT 1.50 m Target depth			
					53.0	2.0						
					52.0	3.0						
					51.0	4.0						
					50.0	5.0						
					49.0	6.0						
					48.0	7.0						

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

SMEC AUSTRALIA



HOLE NO : BH4

FILE / JOB NO : 30011131
SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH5

PROJECT : 266 Longueville Road, Lane Cove GI

CLIENT : Lane Cove Council

FILE / JOB NO : 30011131

LOCATION : Upper

FEATURE : Bowling Green

SHEET : 1 OF 1

POSITION : E: 330874.040, N: 6256048.627 (56 MGA94)

SURFACE ELEVATION : 55.200 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : Edson 3000

MOUNTING : Truck

CONTRACTOR : BHC Drilling

DRILLER : C.W

DATE STARTED : 11/11/11

DATE COMPLETED : 11/11/11

DATE LOGGED : 11/11/11

LOGGED BY : A.G

CHECKED BY : M.G

DRILLING					MATERIAL									
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations		
DRILLING & CASING	WATER													
ADT		E-H		ES	0.0				Silty SAND fine to medium grained, brown, with rootlets in the top 100mm	D	S - F	TOPSOIL		
				0.20m	55.0									
				</										

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

SMEC AUSTRALIA



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH6

PROJECT : 266 Longueville Road, Lane Cove GI

CLIENT : Lane Cove Council

FILE / JOB NO : 30011131

LOCATION : Upper

FEATURE : Bowling Green

SHEET : 1 OF 1

POSITION : E: 330842.730, N: 6256025.009 (56 MGA94)

SURFACE ELEVATION : 55.200 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : Edson 3000

MOUNTING : Truck

CONTRACTOR : BHC Drilling

DRILLER : C.W



DATE STARTED : 11/11/11

DATE COMPLETED : 11/11/11

DATE LOGGED : 11/11/11

LOGGED BY : A.G

CHECKED BY : M.G

DRILLING					MATERIAL							
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER											
ADT		E		ES 0.20m	55.0	0.0		SM	Silty SAND fine to medium grained, brown, with rootlets in the top 100mm	D		TOPSOIL
		M		0.50m 0.50m ES		0.30m			SANDSTONE fine to medium grained, orange, estimate very low to low strength becoming low to medium strength and pale grey at 1.0m			WEATHERED ROCK 0.30: Very Low TC Bit Resistance
		H			54.0	1.0						1.00: Medium TC Bit Resistance
							1.50m		1.50: As above becoming pale grey, low to medium plasticity			
					53.0	2.0						
					52.0	3.0			3.00m 3.00: As above becoming grey and low strength			
					51.0	4.0						
					50.0	5.0						
					49.0	6.0			4.50m 4.50: As above becoming low to medium strength			

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA



HOLE NO : BH7

FILE / JOB NO : 30011131
SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.

HOLE NO : BH8

FILE / JOB NO : 30011131
SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.

HOLE NO : BH9

FILE / JOB NO : 30011131
SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.



HOLE NO : BH10

FILE / JOB NO : 30011131

SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.



HOLE NO : BH11

FILE / JOB NO : 30011131

SHEET : 1 OF 2

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH11

PROJECT : 266 Longueville Road, Lane Cove GI

CLIENT : Lane Cove Council

FILE / JOB NO : 30011131

LOCATION : Lower

FEATURE : Bowling Green

SHEET : 2 OF 2

POSITION : E: 330916.180, N: 6256014.449 (56 MGA94)

SURFACE ELEVATION : 49.500 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : Edson 3000

MOUNTING : Truck

CONTRACTOR : BHC Drilling

DRILLER : C.W

DATE STARTED : 10/11/11

DATE COMPLETED : 10/11/11

DATE LOGGED : 10/11/11

LOGGED BY : A.G

CHECKED BY : M.G

DRILLING				MATERIAL			
DRILLING & CASING	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components
ADT ↓		E-H			8.0		
					8.60m		
		M			8.80m		
		H			9.0		
					41.0		
					41.0		
					9.0		
					9.40m		
					40.0		
					10.0		
					39.0		
					11.0		
					38.0		
					12.0		
					37.0		
					13.0		
					36.0		
					14.0		
					35.0		
					15.0		
					34.0		
					16.0		

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

SMEC AUSTRALIA



HOLE NO : BH12

FILE / JOB NO : 30011131
SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH13

PROJECT : 266 Longueville Road, Lane Cove GI

CLIENT : Lane Cove Council

FILE / JOB NO : 30011131

LOCATION : Lower

FEATURE : Bowling Green

SHEET : 1 OF 2

POSITION : E: 330915.675, N: 6256004.801 (56 MGA94)

SURFACE ELEVATION : 49.500 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : Edson 3000

MOUNTING : Truck

CONTRACTOR : BHC Drilling

DRILLER : C.W

DATE STARTED : 10/11/11

DATE COMPLETED : 10/11/11

DATE LOGGED : 10/11/11

LOGGED BY : A.G

CHECKED BY : M.G

DRILLING				MATERIAL			
PROGRESS	DRILLING	GROUND WATER	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	MATERIAL DESCRIPTION	STRUCTURE & Other Observations
DRILLING & CASING	WATER	PENETRATION			GRAPHIC LOG	Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	
			ES	0.0		Silty SAND	TOPSOIL
			0.20m			fine to medium grained, brown, with rootlets in the top 100mm	0.20: PID = 1.1ppm
				0.40m		Gravelly Silty CLAY	FILL
						low to medium plasticity, pale brown to grey, with angular gravels, brick fragments, ash and glass gravel	
			1.30m	49.0			
			ES				
			1.50m				
			SPT	48.0			
			3, 2, 3				
			N=5				
			1.95m				
				2.0			
				2.50m			
			2.70m	47.0		Silty Gravelly SAND	
			ES			fine to coarse grained, grey, with brick fragments, ash, porcelain and glass silt	
			2.90m				
			3.00m				
			SPT	3.0			
			3, 11, 7				
			N=18				
			3.45m				
				4.0			
			4.30m	46.0			
			ES				
			4.50m				
			SPT	45.0			
			11, 11, 12				
			N=23				
			4.95m				
				5.0			
				5.80m			
			ES				
			6.00m				
			SPT	6.0			
			2, 5, 3				
			N=8				
			6.45m				
				6.40 - 7.00: Medium plasticity clay band			
				7.0			
			7.30m	43.0			
			ES				
			7.50m				
			SPT	42.0			
			2, 1, 0				
			N=1				
			7.95m				
				8.0			

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA



HOLE NO : BH13

FILE / JOB NO : 30011131
SHEET : 2 OF 2

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH14

PROJECT : 266 Longueville Road, Lane Cove GI
LOCATION : Lower

CLIENT : Lane Cove Council
FEATURE : Bowling Green

FILE / JOB NO : 30011131
SHEET : 1 OF 1

POSITION : E: 330881.749, N: 6255997.518 (56 MGA94)

SURFACE ELEVATION : 49.500 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : Edson 3000

MOUNTING : Truck

CONTRACTOR : BHC Drilling

DRILLER : C.W

DATE STARTED : 10/11/11

DATE COMPLETED : 10/11/11

DATE LOGGED : 10/11/11

LOGGED BY : A.G

CHECKED BY : M.G

DRILLING					MATERIAL							
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER											
↑		E			49.0	0.0		SM	Silty SILT fine to medium, brown, with rootlets in the top 100mm	D	s	TOPSOIL
				48.0	0.60m		CH	Sandy Silty CLAY high plasticity, grey orange brown	RESIDUAL SOIL			
				47.0	2.10m			SANDSTONE fine to medium grained, orange, estimate very low to low strength becoming low to medium strength and pale grey at 3.0m	2.00: Seepage at soil/rock interface WEATHERED ROCK 2.10: Low TC Bit Resistance			
				46.0	3.50m			BOREHOLE BH14 TERMINATED AT 3.50 m Target depth				
↓	AD/T	M			45.0	4.0						
				44.0								
				43.0								
				42.0								
		H										

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

SMEC AUSTRALIA



HOLE NO : BH15

FILE / JOB NO : 30011131

SHEET : 1 OF 1

ANGLE FROM HORIZONTAL : 90°

DRILLER : C.W

CHECKED BY : M.G

See Explanatory Notes for details of abbreviations & basis of descriptions.

APPENDIX C – LABORATORY TEST RESULTS

SMEC Testing Services Pty Ltd

14/1 Cowpasture Place, Wetherill Park NSW 2164

Phone: (02)9756 2166 Fax: (02)9756 1137 Email: enquiries@smectesting.com.au

NATA Accredited Laboratory Number: 2750

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**Particle Size Distribution**

Project: Materials Testing - Lane Cove

STS / Sample No.: 9993B / 2

Client: SMEC Australia Pty Ltd

Sample Location: Borehole 5

Address: Level 6, Berry Street, North Sydney NSW

Depth (m): 1.5 - 1.95

Test Method: AS1289.3.6.1, 3.6.3

Method of Dispersion: Mechanical Stirrer

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

Material Description: Clayey Sandy Silty Gravel, grey with brown

Project No.: 16309

Report No.: 11/1431

Report Date: 25/11/2011

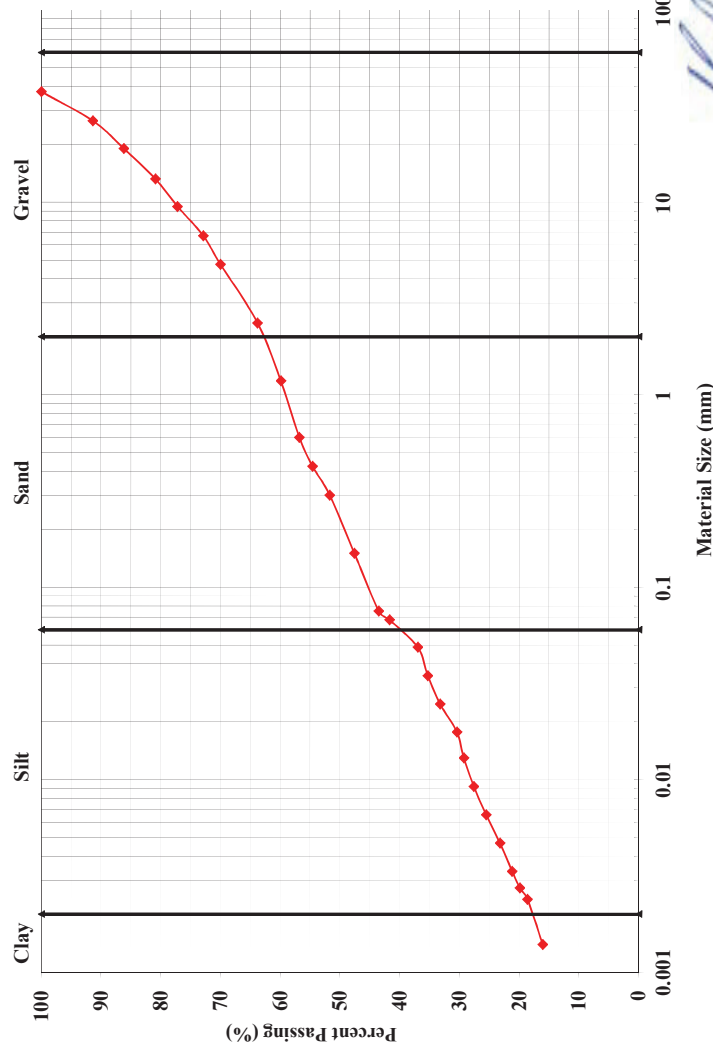
Page: 1 of 7

Client Project No: 30011131

Sieve Size (mm)	Percent Passing (%)
37.5	100.0
26.5	91.4
19.0	86.2
13.2	80.9
9.5	77.2
6.7	72.9
4.75	70.0
2.36	63.8
1.18	59.9
0.60	56.8
0.425	54.6
0.30	51.7
0.15	47.6
0.075	43.5
*Particle Size (mm)	Percent Passing (%)
0.0676	41.7
0.0487	37.0
0.0347	35.3
0.0247	33.2
0.0177	30.4
0.0130	29.3
0.0092	27.6
0.0066	25.5
0.0047	23.2
0.0033	21.2
0.0027	19.9
0.0024	18.6
0.0014	16.0

*Particle Size obtained by Hydrometer Analysis.

Hydrometer Type: g/L



Remarks:

Approved Signatory:

Lincoln Coleman - Senior Geotechnician

Technician: LC

SMEC Testing Services Pty Ltd

14/1 Cowpasture Place, Wetherill Park NSW 2164

Phone: (02)9756 2166 Fax: (02)9756 1137 Email: enquiries@smectesting.com.au

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**Particle Size Distribution**

Project: Materials Testing - Lane Cove

STS / Sample No.: 9993B / 13

Client: SMEC Australia Pty Ltd

Sample Location: Borehole 15

Address: Level 6, Berry Street, North Sydney NSW

Depth (m): 3.0 - 3.45

Test Method: AS1289.3.6.1, .3.6.3

Method of Dispersion: Mechanical Stirrer

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

Material Description: Sandy Clayey Silty Gravel, brown

Project No.: 16309

Report No.: 11/1431

Report Date: 25/11/2011

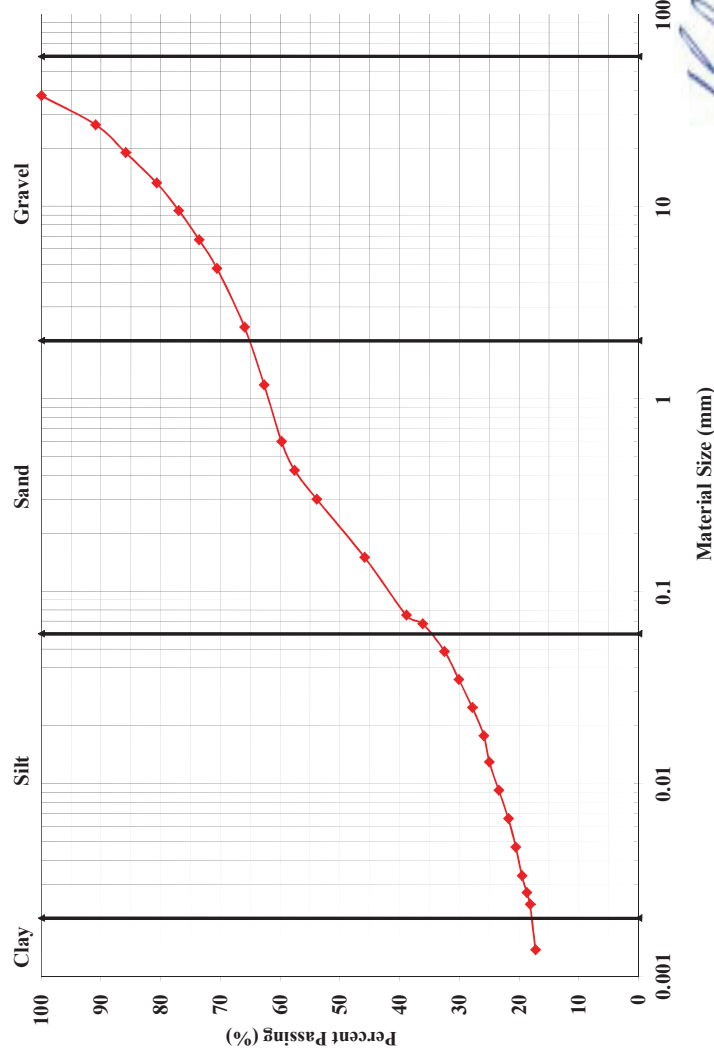
Page: 2 of 7

Client Project No: 30011131

Sieve Size (mm)	Percent Passing (%)
37.5	100.0
26.5	90.9
19.0	85.9
13.2	80.7
9.5	77.0
6.7	73.6
4.75	70.6
2.36	66.0
1.18	62.7
0.60	59.8
0.425	57.6
0.30	53.9
0.15	45.9
0.075	38.9
*Particle Size (mm)	Percent Passing (%)
0.0677	36.1
0.0487	32.5
0.0348	30.1
0.0248	27.8
0.0177	25.9
0.0130	25.0
0.0092	23.4
0.0066	21.8
0.0047	20.6
0.0033	19.5
0.0027	18.7
0.0024	18.2
0.0014	17.3

*Particle Size obtained by Hydrometer Analysis.

Hydrometer Type: g/L



Remarks:

Approved Signatory:

Lincoln Coleman - Senior Geotechnician

Technician: LC

SMEC Testing Services Pty Ltd

14/1 Cowpasture Place, Wetherill Park NSW 2164

Phone: (02)9756 2166 Fax: (02)9756 1137 Email: smectesting@pacific.net.au



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Particle Size Distribution

Project: Materials Testing - Lane Cove

Client: **SMEC Australia Pty Ltd**

Address: Level 6, Berry Street, North Sydney NSW

Test Method: AS1289.3.6.1

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

Material Description: Clayey Gravelly Sand, brown

STS / Sample No.: **9993B / 7**

Sample Location: Borehole 12

Depth (m): 3.0 - 3.45

Test Type: Washed / Dry Sieved

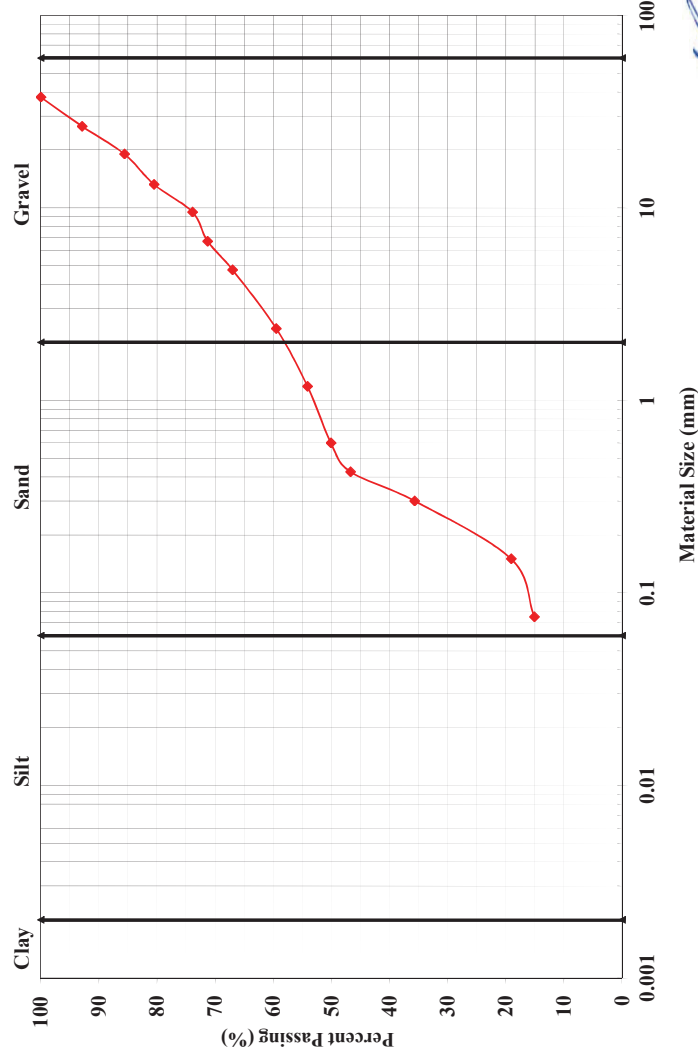
Project No.: 16309

Report No.: 11/1431

Report Date: 25/11/2011

Page: 4 of 7

Client Project No: 30011131



Remarks:

Technician: LC

Approved Signatory:

Lincoln Coleman - Senior Geotechnician

SMEC Testing Services Pty Ltd

14/1 Cowpasture Place, Wetherill Park NSW 2164

Phone: (02)9756 2166 Fax: (02)9756 1137 Email: smectestng@pacific.net.au



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Particle Size Distribution

Project: Materials Testing - Lane Cove

Client: SMEC Australia Pty Ltd

Address: Level 6, Berry Street, North Sydney NSW

Test Method: AS1289.3.6.1

STS / Sample No.: 9993B / 14

Sample Location: Borehole 15

Depth (m): 4.5 - 4.95

Test Type: Washed / Dry Sieved

Project No.: 16309

Report No.: 11/1431

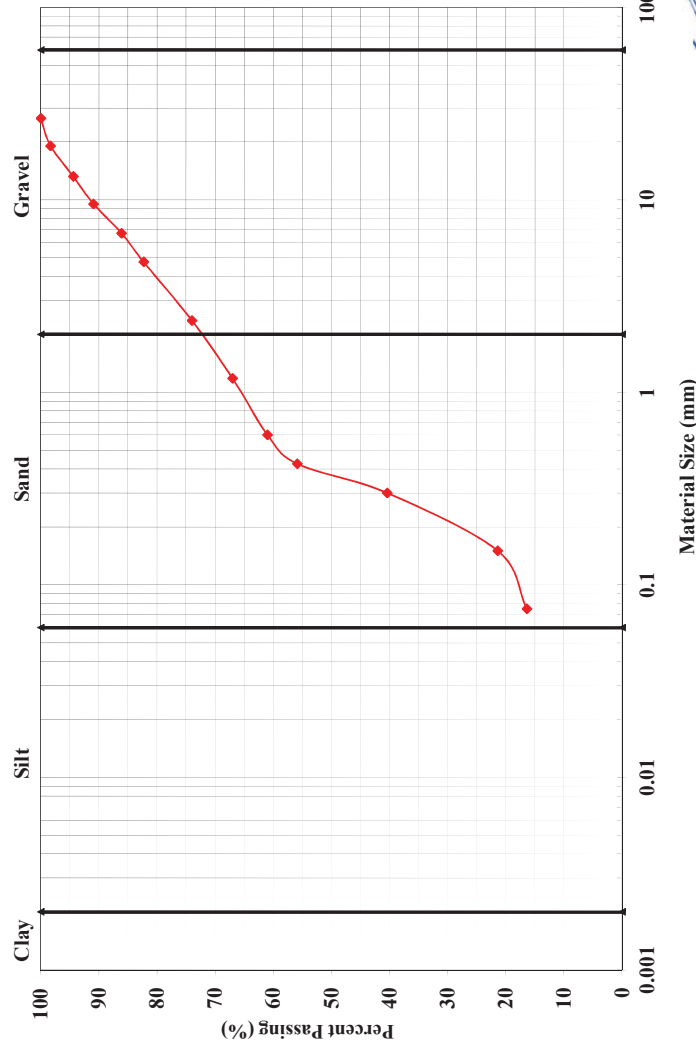
Report Date: 25/11/2011

Page: 5 of 7

Client Project No: 30011131

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

Material Description: Clayey Gravelly Sand, brown



Remarks:

Technician: LC

Approved Signatory:

Lincoln Coleman - Senior Geotechnician

SMEC Testing Services Pty Ltd

14/1 Cowpasture Place, Wetherill Park NSW 2164

Phone: (02)9756 2166 Fax: (02)9756 1137 Email: smectesting@pacific.net.au

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reproduced except in full.*Atterburg Limits and Linear Shrinkage Report*

Project: Materials Testing - Lane Cove

Project No.: 16309

Client: SMEC Australia Pty Ltd

Report No.: 11/1431

Address: Level 6, Berry Street, North Sydney NSW

Report Date: 25/11/2011

Test Method: AS1289.2.1.1, 3.1.1, 3.2.1, 3.3.1, 3.4.1

Page: 6 of 7

Client Project No.: 30011131

Sampling Procedure: Samples Supplied by Client

STS / Sample No.	9993B / 5	9993B / 6	9993B / 9	9993B / 12		
Sample Location	Borehole 8	Borehole 11	Borehole 13	Borehole 15		
Material Description	Sandy Clay, light brown, yellow-brown & red-brown, some grey-brown	Sandy Clay, brown, some gravel	Sandy Clay, brown with orange-brown, some gravel	Sandy Clay, brown, some gravel		
Depth (m)	3.0 - 3.45	1.5 - 1.95	1.5 - 1.95	1.7 - 2.15		
Sample Date	Not Known	Not Known	Not Known	Not Known		
Sample History	Air Dried	Air Dried	Air Dried	Air Dried		
Method of Preparation	Dry Sieved	Dry Sieved	Dry Sieved	Dry Sieved		
Liquid Limit (%)	28	33	46	40		
Plastic Limit (%)	14	13	17	16		
Plasticity Index	14	20	29	24		
Linear Shrinkage (%)	5.5	10.0	13.5	11.0		
Mould Size (mm)	250	127	127	127		
Crumbing	N	N	N	N		
Curling	N	N	N	N		

Remarks:

Approved Signatory..

Technician: BV

Lincoln Coleman - Senior Geotechnician

SMEC Testing Services Pty Ltd

14/1 Cowpasture Place, Wetherill Park NSW 2164

Phone: (02)9756 2166 Fax: (02)9756 1137 Email: smectesting@pacific.net.au

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accreditation requirements.Accredited for compliance
with ISO/IEC 17025.This Document may not be
reproduced except in full.*Moisture Content of Soil and Aggregate Samples*

Project: Materials Testing - Lane Cove

Project No.: 16309

Client: SMEC Australia Pty Ltd

Report No.: 11/1431

Address: Level 6, Berry Street, North Sydney NSW

Report Date: 25/11/2011

Test Method: AS1289.2.1.1

Page: 7 of 7

Client Project No.: 30011131

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

STS / Sample No.	9993B / 1	9993B / 4	9993B / 8	9993B / 10	9993B / 11	
Sample Location	Borehole 3	Borehole 7	Borehole 12	Borehole 13	Borehole 14	
Material Description	Gravelly Sandy Silty Clay, light brown & grey	Gravelly Clayey Sand, orange-brown & grey	Sandy Clay, dark grey with light brown, some gravel	Gravelly Sand, brown, some fines	Sandy Clay, light brown & grey with dark grey, trace of gravel	
Depth (mm)	0.5 - 0.7	1.5 - 1.95	4.5 - 4.95	4.5 - 4.95	1.5 - 1.95	
Sample Date	Not Known	Not Known	Not Known	Not Known	Not Known	
Moisture Content (%)	10.1	9.4	17.4	11.1	19.4	

Remarks:

Approved Signatory...

Technician: LC

Lincoln Coleman - Senior Geotechnician

SMEC Testing Services Pty Ltd
14/1 Cowpasture Place
Wetherill Park
NSW 2164

Attention: David Yonge

Report 319060-S
Client Reference 18435/1017C
Received Date Nov 18, 2011

Certificate of Analysis



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.

Client Sample ID			300/1/31-BH1- 0.0-0.2	300/1/31-BH1- 0.6-0.7	300/1/31-BH2- 0.0-0.2	300/1/31-BH2- 0.5-0.7
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11971	S11-No11972	S11-No11973	S11-No11974
Date Sampled			Nov 10, 2011	Nov 10, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	-	-	< 10	-
TRH C10-C14	50	mg/kg	-	-	< 50	-
TRH C15-C28	100	mg/kg	-	-	< 100	-
TRH C29-C36	100	mg/kg	-	-	< 100	-
TRH C10-36 (Total)	100	mg/kg	-	-	< 100	-
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.5	mg/kg	-	-	< 0.5	-
Total m+p-Xylenes	1	mg/kg	-	-	< 1	-
4-Bromofluorobenzene (surr.)	1	%	-	-	121	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	-	-	^{N04} < 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	-	-	< 1.5	-
Total BTEX	1.5	mg/kg	-	-	< 1.5	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	-	-
Total PCB	0.5	mg/kg	< 0.5	-	-	-
Dibutylchlorobenzene (surr.)	1	%	112	-	-	-
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDT	0.2	mg/kg	< 0.2	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-

Client Sample ID			300/1/31-BH1- 0.0-0.2 Soil S11-No11971 Nov 10, 2011	300/1/31-BH1- 0.6-0.7 Soil S11-No11972 Nov 10, 2011	300/1/31-BH2- 0.0-0.2 Soil S11-No11973 Nov 10, 2011	300/1/31-BH2- 0.5-0.7 Soil S11-No11974 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
a-Chlordane	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
g-Chlordane	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.2	mg/kg	< 0.2	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	88	-	-	-
Organophosphorus Pesticides (OP)						
Chlorpyrifos	0.5	mg/kg	< 0.5	-	-	-
Coumaphos	0.5	mg/kg	< 0.5	-	-	-
Demeton (total)	1	mg/kg	< 1	-	-	-
Diazinon	0.5	mg/kg	< 0.5	-	-	-
Dichlorvos	0.5	mg/kg	< 0.5	-	-	-
Dimethoate	0.5	mg/kg	< 0.5	-	-	-
Disulfoton	0.5	mg/kg	< 0.5	-	-	-
Ethoprop	0.5	mg/kg	< 0.5	-	-	-
Fenitrothion	0.5	mg/kg	< 0.5	-	-	-
Fensulfthion	0.5	mg/kg	< 0.5	-	-	-
Fenthion	0.5	mg/kg	< 0.5	-	-	-
Methyl azinphos	0.5	mg/kg	< 0.5	-	-	-
Malathion	0.5	mg/kg	< 0.5	-	-	-
Methyl parathion	0.5	mg/kg	< 0.5	-	-	-
Mevinphos	0.5	mg/kg	< 0.5	-	-	-
Monocrotophos	10	mg/kg	< 10	-	-	-
Parathion	0.5	mg/kg	< 0.5	-	-	-
Phorate	0.5	mg/kg	< 0.5	-	-	-
Profenofos	0.5	mg/kg	< 0.5	-	-	-
Prothiofos	0.5	mg/kg	< 0.5	-	-	-
Ronnel	0.5	mg/kg	< 0.5	-	-	-
Stirophos	0.5	mg/kg	< 0.5	-	-	-
Trichloronate	0.5	mg/kg	< 0.5	-	-	-
Triphenylphosphate (surr.)	1	%	91	-	-	-
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			300/1/31-BH1- 0.0-0.2 Soil S11-No11971 Nov 10, 2011	300/1/31-BH1- 0.6-0.7 Soil S11-No11972 Nov 10, 2011	300/1/31-BH2- 0.0-0.2 Soil S11-No11973 Nov 10, 2011	300/1/31-BH2- 0.5-0.7 Soil S11-No11974 Nov 10, 2011
Sample Matrix mgt-LabMark Sample No. Date Sampled						
Test/Reference	LOR	Unit				
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	-	< 1	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH	1	mg/kg	-	-	< 1	-
2-Fluorobiphenyl (surr.)	1	%	-	-	105	-
p-Terphenyl-d14 (surr.)	1	%	-	-	113	-
% Moisture	0.1	%	14	-	11	-
Asbestos			ASET Report	-	-	-
Heavy Metals						
Arsenic	1	mg/kg	1.9	-	-	-
Cadmium	0.1	mg/kg	< 0.1	-	-	-
Chromium	2	mg/kg	17	-	-	-
Copper	2	mg/kg	22	-	-	-
Lead	2	mg/kg	73	-	-	-
Nickel	1	mg/kg	17	-	-	-
Zinc	5	mg/kg	74	-	-	-
Mercury	0.05	mg/kg	0.28	-	-	-
Barium	5	mg/kg	74	-	-	-
Beryllium	1	mg/kg	< 1	-	-	-
Cobalt	1	mg/kg	15	-	-	-
Manganese	5	mg/kg	230	-	-	-
Vanadium	5	mg/kg	23	-	-	-

Client Sample ID			300/1/31-BH3-0.0-0.2	300/1/31-BH3-0.5-0.7	300/1/31-BH4-0.0-0.2	300/1/31-BH4-0.0-0.2 (1)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11975	S11-No11976	S11-No11977	S11-No11978
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	-	-	-	< 10
TRH C10-C14	50	mg/kg	-	-	-	< 50
TRH C15-C28	100	mg/kg	-	-	-	< 100
TRH C29-C36	100	mg/kg	-	-	-	< 100
TRH C10-36 (Total)	100	mg/kg	-	-	-	< 100
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	-	-	-	< 0.5
Ethylbenzene	0.5	mg/kg	-	-	-	< 0.5
o-Xylene	0.5	mg/kg	-	-	-	< 0.5
Toluene	0.5	mg/kg	-	-	-	< 0.5
Total m+p-Xylenes	1	mg/kg	-	-	-	< 1
4-Bromofluorobenzene (surr.)	1	%	-	-	-	125
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	-	-	-	^{N04} < 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	-	-	-	< 1.5
Total BTEX	1.5	mg/kg	-	-	-	< 1.5
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	-	-	< 1
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH	1	mg/kg	-	-	-	< 1
2-Fluorobiphenyl (surr.)	1	%	-	-	-	103
p-Terphenyl-d14 (surr.)	1	%	-	-	-	108
% Moisture	0.1	%	4.1	-	-	4.2
CANCELLED			-	-		-
Heavy Metals						
Arsenic	1	mg/kg	< 1	-	-	< 1

Client Sample ID			300/1/31-BH3-0.0-0.2	300/1/31-BH3-0.5-0.7	300/1/31-BH4-0.0-0.2	300/1/31-BH4-0.0-0.2 (1)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11975	S11-No11976	S11-No11977	S11-No11978
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
Cadmium	0.1	mg/kg	< 0.1	-	-	< 0.1
Chromium	2	mg/kg	< 2	-	-	< 2
Copper	2	mg/kg	2.0	-	-	< 2
Lead	2	mg/kg	3.9	-	-	3.0
Nickel	1	mg/kg	< 1	-	-	< 1
Zinc	5	mg/kg	< 5	-	-	< 5
Mercury	0.05	mg/kg	2.0	-	-	1.2
Barium	5	mg/kg	11	-	-	14
Beryllium	1	mg/kg	< 1	-	-	< 1
Cobalt	1	mg/kg	2.9	-	-	2.5
Manganese	5	mg/kg	54	-	-	56
Vanadium	5	mg/kg	< 5	-	-	< 5

Client Sample ID			300/1/31-BH4-0.0-0.2 (3)	300/1/31-BH4-0.5-0.7	300/1/31-BH4-1.1-1.3	300/1/31-BH5-0.0-0.2
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11979	S11-No11980	S11-No11981	S11-No11982
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	-	-	-
TRH C10-C14	50	mg/kg	< 50	-	-	-
TRH C15-C28	100	mg/kg	< 100	-	-	-
TRH C29-C36	100	mg/kg	< 100	-	-	-
TRH C10-36 (Total)	100	mg/kg	< 100	-	-	-
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	< 0.5	-	-	-
Ethylbenzene	0.5	mg/kg	< 0.5	-	-	-
o-Xylene	0.5	mg/kg	< 0.5	-	-	-
Toluene	0.5	mg/kg	< 0.5	-	-	-
Total m+p-Xylenes	1	mg/kg	< 1	-	-	-
4-Bromofluorobenzene (surr.)	1	%	109	-	-	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	^{N04} < 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	-	-	-
Total BTEX	1.5	mg/kg	< 1.5	-	-	-
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	-	-	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Total PAH	1	mg/kg	< 1	-	-	-
2-Fluorobiphenyl (surr.)	1	%	94	-	-	-
p-Terphenyl-d14 (surr.)	1	%	102	-	-	-
% Moisture	0.1	%	8.3	2.6	-	-
Heavy Metals						
Arsenic	1	mg/kg	< 1	< 1	-	-
Cadmium	0.1	mg/kg	< 0.1	< 0.1	-	-

Client Sample ID			300/1/31-BH4- 0.0-0.2 (3) Soil S11-No11979 Nov 11, 2011	300/1/31-BH4- 0.5-0.7 Soil S11-No11980 Nov 11, 2011	300/1/31-BH4- 1.1-1.3 Soil S11-No11981 Nov 11, 2011	300/1/31-BH5- 0.0-0.2 Soil S11-No11982 Nov 11, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Chromium	2	mg/kg	4.8	2.5	-	-
Copper	2	mg/kg	3.7	3.9	-	-
Lead	2	mg/kg	7.9	5.4	-	-
Nickel	1	mg/kg	< 1	< 1	-	-
Zinc	5	mg/kg	5.9	8.8	-	-
Mercury	0.05	mg/kg	3.1	1.5	-	-
Barium	5	mg/kg	22	26	-	-
Beryllium	1	mg/kg	< 1	< 1	-	-
Cobalt	1	mg/kg	4.2	3.4	-	-
Manganese	5	mg/kg	140	70	-	-
Vanadium	5	mg/kg	6.8	6.5	-	-

Client Sample ID			300/1/31-BH5-1.3-1.5	300/1/31-BH5-2.7-2.9	300/1/31-BH5-2.7-2.9	300/1/31-BH5-3.7-3.9
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11983	S11-No11984	S11-No11985	S11-No11986
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	-	-
TRH C10-C14	50	mg/kg	< 50	< 50	-	-
TRH C15-C28	100	mg/kg	< 100	< 100	-	-
TRH C29-C36	100	mg/kg	< 100	< 100	-	-
TRH C10-36 (Total)	100	mg/kg	< 100	< 100	-	-
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	< 0.5	< 0.5	-	-
Ethylbenzene	0.5	mg/kg	< 0.5	< 0.5	-	-
o-Xylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Toluene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total m+p-Xylenes	1	mg/kg	< 1	< 1	-	-
4-Bromofluorobenzene (surr.)	1	%	118	120	-	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	^{N04} < 0.5	^{N04} < 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	< 1.5	-	-
Total BTEX	1.5	mg/kg	< 1.5	< 1.5	-	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	-	-
Total PCB	0.5	mg/kg	< 0.5	-	-	-
Dibutylchlorobenzene (surr.)	1	%	107	-	-	-
Speciated Phenols						
2,4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2,4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	-
2,4,5-Trichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2,4,6-Trichlorophenol	0.5	mg/kg	< 0.5	-	-	-
Phenol	0.5	mg/kg	< 0.5	-	-	-
2-Methylphenol (o-Cresol)	0.5	mg/kg	< 0.5	-	-	-
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	< 1	-	-	-
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2-Nitrophenol	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	0.5	mg/kg	< 0.5	-	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-	-
Phenol-d5 (surr.)	1	%	117	-	-	-
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDE	0.05	mg/kg	< 0.05	-	-	-

Client Sample ID			300/1/31-BH5-1.3-1.5	300/1/31-BH5-2.7-2.9 (1)	300/1/31-BH5-2.7-2.9 (2)	300/1/31-BH5-3.7-3.9
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11983	S11-No11984	S11-No11985	S11-No11986
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
4,4'-DDT	0.2	mg/kg	< 0.2	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
a-Chlordane	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
g-Chlordane	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.2	mg/kg	< 0.2	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	99	-	-	-
Polyaromatic Hydrocarbons (PAH)						
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)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	< 1	-	-
Benzo(g,h,i)perylene	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	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH	1	mg/kg	< 1	< 1	-	-
2-Fluorobiphenyl (surr.)	1	%	111	105	-	-
p-Terphenyl-d14 (surr.)	1	%	120	114	-	-
Cyanide (total)	1	mg/kg	< 1	-	-	-
Fluoride (soluble)	1	mg/kg	< 1	-	-	-
% Moisture	0.1	%	11	13	-	-
Heavy Metals						
Arsenic	1	mg/kg	< 1	1.7	-	-
Cadmium	0.1	mg/kg	< 0.1	< 0.1	-	-
Chromium	2	mg/kg	4.9	4.6	-	-
Copper	2	mg/kg	8.8	13	-	-

Client Sample ID			300/1/31-BH5- 1.3-1.5	300/1/31-BH5- 2.7-2.9 (1)	300/1/31-BH5- 2.7-2.9 (2)	300/1/31-BH5- 3.7-3.9
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11983	S11-No11984	S11-No11985	S11-No11986
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
Lead	2	mg/kg	19	10	-	-
Molybdenum	1	mg/kg	< 1	-	-	-
Nickel	1	mg/kg	< 1	< 1	-	-
Selenium	2	mg/kg	< 2	-	-	-
Silver	0.1	mg/kg	0.1	-	-	-
Tin	1	mg/kg	< 1	-	-	-
Zinc	5	mg/kg	18	20	-	-
Mercury	0.05	mg/kg	0.29	0.49	-	-
Barium	5	mg/kg	-	21	-	-
Beryllium	1	mg/kg	-	< 1	-	-
Cobalt	1	mg/kg	-	11	-	-
Manganese	5	mg/kg	-	34	-	-
Vanadium	5	mg/kg	-	17	-	-

Client Sample ID			300/1/31-BH6- 0.0-0.2 Soil S11-No11987 Nov 11, 2011	300/1/31-BH6- 0.5-0.7 Soil S11-No11988 Nov 11, 2011	300/1/31-BH7- 0.0-0.2 Soil S11-No11989 Nov 11, 2011	300/1/31-BH7- 1.3-1.5 Soil S11-No11990 Nov 11, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	-
Total PCB	0.5	mg/kg	-	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	-	-	108	-
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	-	-	0.15	-
4,4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4,4'-DDT	0.2	mg/kg	-	-	< 0.2	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
a-Chlordane	0.05	mg/kg	-	-	0.39	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	0.27	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-
g-Chlordane	0.05	mg/kg	-	-	0.14	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	0.07	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.2	mg/kg	-	-	< 0.2	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	97	-
Organophosphorus Pesticides (OP)						
Chlorpyrifos	0.5	mg/kg	-	-	< 0.5	-
Coumaphos	0.5	mg/kg	-	-	< 0.5	-
Demeton (total)	1	mg/kg	-	-	< 1	-
Diazinon	0.5	mg/kg	-	-	< 0.5	-
Dichlorvos	0.5	mg/kg	-	-	< 0.5	-
Dimethoate	0.5	mg/kg	-	-	< 0.5	-
Disulfoton	0.5	mg/kg	-	-	< 0.5	-
Ethoprop	0.5	mg/kg	-	-	< 0.5	-
Fenitrothion	0.5	mg/kg	-	-	< 0.5	-
Fensulfothion	0.5	mg/kg	-	-	< 0.5	-
Fenthion	0.5	mg/kg	-	-	< 0.5	-
Methyl azinphos	0.5	mg/kg	-	-	< 0.5	-
Malathion	0.5	mg/kg	-	-	< 0.5	-
Methyl parathion	0.5	mg/kg	-	-	< 0.5	-
Mevinphos	0.5	mg/kg	-	-	< 0.5	-
Monocrotophos	10	mg/kg	-	-	< 10	-
Parathion	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			300/1/31-BH6- 0.0-0.2 Soil S11-No11987 Nov 11, 2011	300/1/31-BH6- 0.5-0.7 Soil S11-No11988 Nov 11, 2011	300/1/31-BH7- 0.0-0.2 Soil S11-No11989 Nov 11, 2011	300/1/31-BH7- 1.3-1.5 Soil S11-No11990 Nov 11, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Phorate	0.5	mg/kg	-	-	< 0.5	-
Profenofos	0.5	mg/kg	-	-	< 0.5	-
Prothiofos	0.5	mg/kg	-	-	< 0.5	-
Ronnel	0.5	mg/kg	-	-	< 0.5	-
Stirophos	0.5	mg/kg	-	-	< 0.5	-
Trichloronate	0.5	mg/kg	-	-	< 0.5	-
Triphenylphosphate (surr.)	1	%	-	-	77	-
% Moisture	0.1	%	4.0	-	4.9	-
Asbestos			-	-	ASET Report	-
Heavy Metals						
Arsenic	1	mg/kg	< 1	-	-	-
Cadmium	0.1	mg/kg	< 0.1	-	-	-
Chromium	2	mg/kg	< 2	-	-	-
Copper	2	mg/kg	< 2	-	-	-
Lead	2	mg/kg	3.5	-	-	-
Nickel	1	mg/kg	< 1	-	-	-
Zinc	5	mg/kg	< 5	-	-	-
Mercury	0.05	mg/kg	0.85	-	-	-
Barium	5	mg/kg	13	-	-	-
Beryllium	1	mg/kg	< 1	-	-	-
Cobalt	1	mg/kg	3.4	-	-	-
Manganese	5	mg/kg	73	-	-	-
Vanadium	5	mg/kg	< 5	-	-	-

Client Sample ID			300/1/31-BH7- 2.7-2.9	300/1/31-BH8- 0.0-0.2	300/1/31-BH8- 1.3-1.5	300/1/31-BH8- 2.7-2.9
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11991	S11-No11992	S11-No11993	S11-No11994
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	-	-	< 10	-
TRH C10-C14	50	mg/kg	-	-	< 50	-
TRH C15-C28	100	mg/kg	-	-	< 100	-
TRH C29-C36	100	mg/kg	-	-	< 100	-
TRH C10-36 (Total)	100	mg/kg	-	-	< 100	-
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.5	mg/kg	-	-	< 0.5	-
Total m+p-Xylenes	1	mg/kg	-	-	< 1	-
4-Bromofluorobenzene (surr.)	1	%	-	-	114	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	-	-	^{N04} < 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	-	-	< 1.5	-
Total BTEX	1.5	mg/kg	-	-	< 1.5	-
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	-	< 1	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH	1	mg/kg	-	-	< 1	-
2-Fluorobiphenyl (surr.)	1	%	-	-	110	-
p-Terphenyl-d14 (surr.)	1	%	-	-	118	-
% Moisture	0.1	%	-	4.6	16	-
Heavy Metals						
Arsenic	1	mg/kg	-	< 1	1.2	-
Cadmium	0.1	mg/kg	-	< 0.1	< 0.1	-
Chromium	2	mg/kg	-	7.6	5.1	-

Client Sample ID			300/1/31-BH7- 2.7-2.9	300/1/31-BH8- 0.0-0.2	300/1/31-BH8- 1.3-1.5	300/1/31-BH8- 2.7-2.9
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11991	S11-No11992	S11-No11993	S11-No11994
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 11, 2011	Nov 11, 2011
Test/Reference	LOR	Unit				
Copper	2	mg/kg	-	3.2	< 2	-
Lead	2	mg/kg	-	6.6	11	-
Nickel	1	mg/kg	-	< 1	< 1	-
Zinc	5	mg/kg	-	9.0	6.6	-
Mercury	0.05	mg/kg	-	3.0	0.24	-
Barium	5	mg/kg	-	25	14	-
Beryllium	1	mg/kg	-	< 1	< 1	-
Cobalt	1	mg/kg	-	6.2	3.8	-
Manganese	5	mg/kg	-	150	22	-
Vanadium	5	mg/kg	-	11	15	-

Client Sample ID			300/1/31-BH9-0.0-0.2	300/1/31-BH9-0.5-0.7	300/1/31-BH10-0.0-0.2 (1)	300/1/31-BH10-0.0-0.2 (3)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11995	S11-No11996	S11-No11997	S11-No11998
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	-	-	< 10	-
TRH C10-C14	50	mg/kg	-	-	< 50	-
TRH C15-C28	100	mg/kg	-	-	< 100	-
TRH C29-C36	100	mg/kg	-	-	< 100	-
TRH C10-36 (Total)	100	mg/kg	-	-	< 100	-
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.5	mg/kg	-	-	< 0.5	-
Total m+p-Xylenes	1	mg/kg	-	-	< 1	-
4-Bromofluorobenzene (surr.)	1	%	-	-	126	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	-	-	^{N04} < 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	-	-	< 1.5	-
Total BTEX	1.5	mg/kg	-	-	< 1.5	-
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	-	< 1	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH	1	mg/kg	-	-	< 1	-
2-Fluorobiphenyl (surr.)	1	%	-	-	104	-
p-Terphenyl-d14 (surr.)	1	%	-	-	113	-
% Moisture	0.1	%	6.6	-	4.8	-
Asbestos			ASET Report	-	-	-
Heavy Metals						
Arsenic	1	mg/kg	3.7	-	< 1	-

Client Sample ID			300/1/31-BH9-0.0-0.2	300/1/31-BH9-0.5-0.7	300/1/31-BH10-0.0-0.2 (1)	300/1/31-BH10-0.0-0.2 (3)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No11995	S11-No11996	S11-No11997	S11-No11998
Date Sampled			Nov 11, 2011	Nov 11, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
Cadmium	0.1	mg/kg	< 0.1	-	< 0.1	-
Chromium	2	mg/kg	6.1	-	< 2	-
Copper	2	mg/kg	< 2	-	42	-
Lead	2	mg/kg	9.7	-	2.1	-
Nickel	1	mg/kg	< 1	-	46	-
Zinc	5	mg/kg	< 5	-	27	-
Mercury	0.05	mg/kg	0.21	-	0.59	-
Barium	5	mg/kg	9.6	-	13	-
Beryllium	1	mg/kg	< 1	-	< 1	-
Cobalt	1	mg/kg	2.7	-	25	-
Manganese	5	mg/kg	15	-	260	-
Vanadium	5	mg/kg	23	-	< 5	-

Client Sample ID			300/1/31-BH10 -1.0-1.3 Soil S11-No11999 Nov 10, 2011	300/1/31-BH10 -2.7-2.9 Soil S11-No12000 Nov 10, 2011	300/1/31-BH11 -0.0-0.2 Soil S11-No12001 Nov 10, 2011	300/1/31-BH11 -1.3-1.5 Soil S11-No12002 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	-	-	< 10
TRH C10-C14	50	mg/kg	< 50	-	-	< 50
TRH C15-C28	100	mg/kg	< 100	-	-	< 100
TRH C29-C36	100	mg/kg	< 100	-	-	< 100
TRH C10-36 (Total)	100	mg/kg	< 100	-	-	< 100
Volatile Organic Compounds (VOC)						
1.1-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dibromo-3-chloropropane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dibromoethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	-	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.3-Dichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
2-Butanone (MEK)	5	mg/kg	-	-	-	< 5
2-Chlorotoluene	0.5	mg/kg	-	-	-	< 0.5
2-Hexanone	5	mg/kg	-	-	-	< 5
2-Pentanone	5	mg/kg	-	-	-	< 5
4-Chlorotoluene	0.5	mg/kg	-	-	-	< 0.5
4-Methyl-2-pentanone (MIBK)	5	mg/kg	-	-	-	< 5
Benzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromobenzene	0.5	mg/kg	-	-	-	< 0.5
Bromodichloromethane	0.5	mg/kg	-	-	-	< 0.5
Bromoform	0.5	mg/kg	-	-	-	< 0.5
Bromomethane	5	mg/kg	-	-	-	< 5
Carbon disulfide	0.5	mg/kg	-	-	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	-	-	-	< 0.5
Chlorobenzene	0.5	mg/kg	-	-	-	< 0.5
Chloroethane	5	mg/kg	-	-	-	< 5
Chloroform	0.5	mg/kg	-	-	-	< 0.5
Chloromethane	5	mg/kg	-	-	-	< 5
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	-	< 0.5
Dibromochloromethane	0.5	mg/kg	-	-	-	< 0.5
Dichlorodifluoromethane	5	mg/kg	-	-	-	< 5
Ethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	-	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	-	< 0.5
Methylene Chloride	5	mg/kg	-	-	-	< 5
n-Butylbenzene	0.5	mg/kg	-	-	-	< 0.5
n-Propylbenzene	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			300/1/31-BH10 -1.0-1.3 Soil S11-No11999 Nov 10, 2011	300/1/31-BH10 -2.7-2.9 Soil S11-No12000 Nov 10, 2011	300/1/31-BH11 -0.0-0.2 Soil S11-No12001 Nov 10, 2011	300/1/31-BH11 -1.3-1.5 Soil S11-No12002 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
o-Xylene	0.5	mg/kg	< 0.5	-	-	< 0.5
p-Isopropyltoluene	0.5	mg/kg	-	-	-	< 0.5
sec-Butylbenzene	0.5	mg/kg	-	-	-	< 0.5
Styrene	0.5	mg/kg	-	-	-	< 0.5
tert-Butylbenzene	0.5	mg/kg	-	-	-	< 0.5
Tetrachloroethene	0.5	mg/kg	-	-	-	< 0.5
Toluene	0.5	mg/kg	< 0.5	-	-	< 0.5
Total m+p-Xylenes	1	mg/kg	< 1	-	-	< 1
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	-	< 0.5
Trichloroethene	0.5	mg/kg	-	-	-	< 0.5
Trichlorofluoromethane	5	mg/kg	-	-	-	< 5
Vinyl acetate	5	mg/kg	-	-	-	< 5
Vinyl chloride	5	mg/kg	-	-	-	< 5
4-Bromofluorobenzene (surr.)	1	%	121	-	-	100
Toluene-d8 (surr.)	1	%	-	-	-	98
Pentafluorobenzene (surr.)	1	%	-	-	-	103
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	^{N04} < 0.5	-	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	< 20	-	-	< 20
TRH >C10-C16	50	mg/kg	< 50	-	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	-	< 50
TRH >C16-C34	100	mg/kg	< 100	-	-	< 100
TRH >C34-C40	100	mg/kg	< 100	-	-	< 100
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	-	-	< 1.5
Total BTEX	1.5	mg/kg	< 1.5	-	-	< 1.5
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1232	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	-	< 0.5
Total PCB	0.5	mg/kg	-	-	-	< 0.5
Dibutylchloroedate (surr.)	1	%	-	-	-	112
Speciated Phenols						
2.4-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dimethylphenol	0.5	mg/kg	-	-	-	< 0.5
2.4.5-Trichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4.6-Trichlorophenol	0.5	mg/kg	-	-	-	< 0.5
Phenol	0.5	mg/kg	-	-	-	< 0.5
2-Methylphenol (o-Cresol)	0.5	mg/kg	-	-	-	< 0.5
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	-	-	-	< 1
2-Chlorophenol	0.5	mg/kg	-	-	-	< 0.5
2-Nitrophenol	0.5	mg/kg	-	-	-	< 0.5
4-Chloro-3-methylphenol	0.5	mg/kg	-	-	-	< 0.5
Pentachlorophenol	1	mg/kg	-	-	-	< 1
Phenol-d5 (surr.)	1	%	-	-	-	91

Client Sample ID			300/1/31-BH10 -1.0-1.3 Soil S11-No11999 Nov 10, 2011	300/1/31-BH10 -2.7-2.9 Soil S11-No12000 Nov 10, 2011	300/1/31-BH11 -0.0-0.2 Soil S11-No12001 Nov 10, 2011	300/1/31-BH11 -1.3-1.5 Soil S11-No12002 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4,4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4,4'-DDT	0.2	mg/kg	-	-	-	< 0.2
α-BHC	0.05	mg/kg	-	-	-	< 0.05
α-Chlordane	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
β-BHC	0.05	mg/kg	-	-	-	< 0.05
δ-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
γ-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
γ-Chlordane	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.2	mg/kg	-	-	-	< 0.2
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	101
Polyaromatic Hydrocarbons (PAH)						
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)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	-	-	< 1
Benzo(g,h,i)perylene	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	-	-	1.0
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	-	-	0.8
Total PAH	1	mg/kg	< 1	-	-	2.8
2-Fluorobiphenyl (surr.)	1	%	74	-	-	88
p-Terphenyl-d14 (surr.)	1	%	71	-	-	103
Cyanide (total)	1	mg/kg	-	-	-	< 1
Fluoride (soluble)	1	mg/kg	-	-	-	1.8
% Moisture	0.1	%	12	-	-	13
Asbestos			-	-	-	ASET Report
Heavy Metals						
Arsenic	1	mg/kg	< 1	-	-	< 1

Client Sample ID			300/1/31-BH10 -1.0-1.3 Soil S11-No11999 Nov 10, 2011	300/1/31-BH10 -2.7-2.9 Soil S11-No12000 Nov 10, 2011	300/1/31-BH11 -0.0-0.2 Soil S11-No12001 Nov 10, 2011	300/1/31-BH11 -1.3-1.5 Soil S11-No12002 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Cadmium	0.1	mg/kg	< 0.1	-	-	< 0.1
Chromium	2	mg/kg	4.3	-	-	4.5
Copper	2	mg/kg	< 2	-	-	8.9
Lead	2	mg/kg	12	-	-	65
Molybdenum	1	mg/kg	-	-	-	< 1
Nickel	1	mg/kg	< 1	-	-	6.0
Selenium	2	mg/kg	-	-	-	< 2
Silver	0.1	mg/kg	-	-	-	0.2
Tin	1	mg/kg	-	-	-	< 1
Zinc	5	mg/kg	< 5	-	-	33
Mercury	0.05	mg/kg	0.07	-	-	0.26
Barium	5	mg/kg	200	-	-	-
Beryllium	1	mg/kg	< 1	-	-	-
Cobalt	1	mg/kg	1.3	-	-	-
Manganese	5	mg/kg	< 5	-	-	-
Vanadium	5	mg/kg	9.2	-	-	-

Client Sample ID			300/1/31-BH11 -4.3-4.5	300/1/31-BH11 -5.7-5.9	300/1/31-BH11 -8.6-8.8	300/1/31-BH12 -0.1-0.3
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No12003	S11-No12004	S11-No12005	S11-No12006
Date Sampled			Nov 10, 2011	Nov 10, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	-	< 10	-
TRH C10-C14	50	mg/kg	< 50	-	< 50	-
TRH C15-C28	100	mg/kg	< 100	-	< 100	-
TRH C29-C36	100	mg/kg	< 100	-	< 100	-
TRH C10-36 (Total)	100	mg/kg	< 100	-	< 100	-
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Ethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
o-Xylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Toluene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total m+p-Xylenes	1	mg/kg	< 1	-	< 1	-
4-Bromofluorobenzene (surr.)	1	%	118	-	112	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	^{N04} < 0.5	-	^{N04} < 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	-	< 1.5	-
Total BTEX	1.5	mg/kg	< 1.5	-	< 1.5	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	-
Total PCB	0.5	mg/kg	-	-	< 0.5	-
Dibutylchloroendate (surr.)	1	%	-	-	107	-
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4,4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4,4'-DDT	0.2	mg/kg	-	-	< 0.2	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
a-Chlordane	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-

Client Sample ID			300/1/31-BH11 -4.3-4.5	300/1/31-BH11 -5.7-5.9	300/1/31-BH11 -8.6-8.8	300/1/31-BH12 -0.1-0.3
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No12003	S11-No12004	S11-No12005	S11-No12006
Date Sampled			Nov 10, 2011	Nov 10, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
g-Chlordane	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.2	mg/kg	-	-	< 0.2	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	107	-
Organophosphorus Pesticides (OP)						
Chlorpyrifos	0.5	mg/kg	-	-	< 0.5	-
Coumaphos	0.5	mg/kg	-	-	< 0.5	-
Demeton (total)	1	mg/kg	-	-	< 1	-
Diazinon	0.5	mg/kg	-	-	< 0.5	-
Dichlorvos	0.5	mg/kg	-	-	< 0.5	-
Dimethoate	0.5	mg/kg	-	-	< 0.5	-
Disulfoton	0.5	mg/kg	-	-	< 0.5	-
Ethoprop	0.5	mg/kg	-	-	< 0.5	-
Fenitrothion	0.5	mg/kg	-	-	< 0.5	-
Fensulfothion	0.5	mg/kg	-	-	< 0.5	-
Fenthion	0.5	mg/kg	-	-	< 0.5	-
Methyl azinphos	0.5	mg/kg	-	-	< 0.5	-
Malathion	0.5	mg/kg	-	-	< 0.5	-
Methyl parathion	0.5	mg/kg	-	-	< 0.5	-
Mevinphos	0.5	mg/kg	-	-	< 0.5	-
Monocrotophos	10	mg/kg	-	-	< 10	-
Parathion	0.5	mg/kg	-	-	< 0.5	-
Phorate	0.5	mg/kg	-	-	< 0.5	-
Profenofos	0.5	mg/kg	-	-	< 0.5	-
Prothiofos	0.5	mg/kg	-	-	< 0.5	-
Ronnel	0.5	mg/kg	-	-	< 0.5	-
Stirophos	0.5	mg/kg	-	-	< 0.5	-
Trichloronate	0.5	mg/kg	-	-	< 0.5	-
Triphenylphosphate (surr.)	1	%	-	-	77	-
Polyaromatic Hydrocarbons (PAH)						
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)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	-	< 1	-
Benzo(g,h,i)perylene	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	-
Pyrene	0.5	mg/kg	0.6	-	< 0.5	-
Total PAH	1	mg/kg	1.6	-	< 1	-
2-Fluorobiphenyl (surr.)	1	%	94	-	94	-

Client Sample ID			300/1/31-BH11 -4.3-4.5 Soil S11-No12003 Nov 10, 2011	300/1/31-BH11 -5.7-5.9 Soil S11-No12004 Nov 10, 2011	300/1/31-BH11 -8.6-8.8 Soil S11-No12005 Nov 10, 2011	300/1/31-BH12 -0.1-0.3 Soil S11-No12006 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
p-Terphenyl-d14 (surr.)	1	%	120	-	115	-
% Moisture	0.1	%	14	-	13	5.0
Asbestos			ASET Report	-	ASET Report	-
Heavy Metals						
Arsenic	1	mg/kg	< 1	-	< 1	< 1
Cadmium	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Chromium	2	mg/kg	5.7	-	< 2	3.0
Copper	2	mg/kg	8.9	-	< 2	4.6
Lead	2	mg/kg	360	-	13	7.3
Nickel	1	mg/kg	1.4	-	< 1	< 1
Zinc	5	mg/kg	140	-	< 5	17
Mercury	0.05	mg/kg	0.11	-	< 0.05	2.2
Barium	5	mg/kg	96	-	6.5	19
Beryllium	1	mg/kg	< 1	-	< 1	< 1
Cobalt	1	mg/kg	1.8	-	1.1	3.6
Manganese	5	mg/kg	64	-	< 5	100
Vanadium	5	mg/kg	19	-	< 5	5.4

Client Sample ID			300/1/31-BH12 -1.3-1.5 Soil S11-No12007 Nov 10, 2011	300/1/31-BH12 -4.3-4.5 Soil S11-No12008 Nov 10, 2011	300/1/31-BH13 -0.0-0.2 Soil S11-No12009 Nov 10, 2011	300/1/31-BH13 -1.3-1.5 Soil S11-No12010 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	-	< 10
TRH C10-C14	50	mg/kg	< 50	< 50	-	< 50
TRH C15-C28	100	mg/kg	< 100	< 100	-	< 100
TRH C29-C36	100	mg/kg	< 100	< 100	-	< 100
TRH C10-36 (Total)	100	mg/kg	< 100	< 100	-	< 100
Volatile Organic Compounds (VOC)						
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dibromo-3-chloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Butanone (MEK)	5	mg/kg	< 5	-	-	< 5
2-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Hexanone	5	mg/kg	< 5	-	-	< 5
2-Pentanone	5	mg/kg	< 5	-	-	< 5
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Methyl-2-pentanone (MIBK)	5	mg/kg	< 5	-	-	< 5
Benzene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Bromobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromoform	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromomethane	5	mg/kg	< 5	-	-	< 5
Carbon disulfide	0.5	mg/kg	< 0.5	-	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	-	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Chloroethane	5	mg/kg	< 5	-	-	< 5
Chloroform	0.5	mg/kg	< 0.5	-	-	< 0.5
Chloromethane	5	mg/kg	< 5	-	-	< 5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Dichlorodifluoromethane	5	mg/kg	< 5	-	-	< 5
Ethylbenzene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	-	< 0.5
Methylene Chloride	5	mg/kg	< 5	-	-	< 5
n-Butylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
n-Propylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			300/1/31-BH12 -1.3-1.5 Soil S11-No12007 Nov 10, 2011	300/1/31-BH12 -4.3-4.5 Soil S11-No12008 Nov 10, 2011	300/1/31-BH13 -0.0-0.2 Soil S11-No12009 Nov 10, 2011	300/1/31-BH13 -1.3-1.5 Soil S11-No12010 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
o-Xylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
p-Isopropyltoluene	0.5	mg/kg	< 0.5	-	-	< 0.5
sec-Butylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Styrene	0.5	mg/kg	< 0.5	-	-	< 0.5
tert-Butylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
Toluene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Total m+p-Xylenes	1	mg/kg	< 1	< 1	-	< 1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
Trichlorofluoromethane	5	mg/kg	< 5	-	-	< 5
Vinyl acetate	5	mg/kg	< 5	-	-	< 5
Vinyl chloride	5	mg/kg	< 5	-	-	< 5
4-Bromofluorobenzene (surr.)	1	%	100	126	-	98
Toluene-d8 (surr.)	1	%	99	-	-	99
Pentafluorobenzene (surr.)	1	%	110	-	-	103
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	^{N04} < 0.5	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	-	< 20
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	< 20	< 20	-	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	-	< 50
TRH >C16-C34	100	mg/kg	130	< 100	-	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	-	< 100
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	< 1.5	-	< 1.5
Total BTEX	1.5	mg/kg	< 1.5	< 1.5	-	< 1.5
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
Dibutylchloroedate (surr.)	1	%	100	-	-	110
Speciated Phenols						
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2.4.5-Trichlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2.4.6-Trichlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Methylphenol (o-Cresol)	0.5	mg/kg	< 0.5	-	-	< 0.5
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	< 1	-	-	< 1
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Nitrophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Chloro-3-methylphenol	0.5	mg/kg	< 0.5	-	-	< 0.5
Pentachlorophenol	1	mg/kg	< 1	-	-	< 1
Phenol-d5 (surr.)	1	%	94	-	-	88

Client Sample ID			300/1/31-BH12 -1.3-1.5 Soil S11-No12007 Nov 10, 2011	300/1/31-BH12 -4.3-4.5 Soil S11-No12008 Nov 10, 2011	300/1/31-BH13 -0.0-0.2 Soil S11-No12009 Nov 10, 2011	300/1/31-BH13 -1.3-1.5 Soil S11-No12010 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Organochlorine Pesticides (OC)						
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	0.2	mg/kg	< 0.2	-	-	< 0.2
a-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
a-Chlordane	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
g-Chlordane	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
Tetrachloro-m-xylene (surr.)	1	%	98	-	-	96
Polyaromatic Hydrocarbons (PAH)						
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	0.8	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.8	< 0.5	-	1.0
Benzo(a)pyrene	0.5	mg/kg	3.2	0.5	-	1.3
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	4.2	< 1	-	1.9
Benzo(g,h,i)perylene	0.5	mg/kg	1.7	< 0.5	-	0.7
Chrysene	0.5	mg/kg	2.2	< 0.5	-	1.1
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	3.9	< 0.5	-	1.8
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	1.3	< 0.5	-	0.6
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	2.3	< 0.5	-	0.8
Pyrene	0.5	mg/kg	4.6	0.5	-	1.9
Total PAH	1	mg/kg	27	1.0	-	11
2-Fluorobiphenyl (surr.)	1	%	90	101	-	85
p-Terphenyl-d14 (surr.)	1	%	116	122	-	106
Cyanide (total)	1	mg/kg	< 1	-	-	< 1
Fluoride (soluble)	1	mg/kg	1.4	-	-	1.3
% Moisture	0.1	%	14	13	-	16
Asbestos			ASET Report	-	-	ASET Report
Heavy Metals						
Arsenic	1	mg/kg	< 1	< 1	-	< 1

Client Sample ID			300/1/31-BH12 -1.3-1.5 Soil S11-No12007 Nov 10, 2011	300/1/31-BH12 -4.3-4.5 Soil S11-No12008 Nov 10, 2011	300/1/31-BH13 -0.0-0.2 Soil S11-No12009 Nov 10, 2011	300/1/31-BH13 -1.3-1.5 Soil S11-No12010 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Cadmium	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Chromium	2	mg/kg	9.4	4.5	-	11
Copper	2	mg/kg	15	9.0	-	38
Lead	2	mg/kg	130	640	-	42
Molybdenum	1	mg/kg	< 1	-	-	< 1
Nickel	1	mg/kg	< 1	< 1	-	5.4
Selenium	2	mg/kg	< 2	-	-	< 2
Silver	0.1	mg/kg	0.1	-	-	0.2
Tin	1	mg/kg	6.5	-	-	1.6
Zinc	5	mg/kg	74	280	-	26
Mercury	0.05	mg/kg	0.31	0.36	-	0.20
Barium	5	mg/kg	-	190	-	-
Beryllium	1	mg/kg	-	< 1	-	-
Cobalt	1	mg/kg	-	1.1	-	-
Manganese	5	mg/kg	-	69	-	-
Vanadium	5	mg/kg	-	16	-	-

Client Sample ID			300/1/31-BH13 -2.7-2.9	300/1/31-BH13 -4.3-4.5	300/1/31-BH13 -5.8-6.0	300/1/31-BH13 -7.3-7.5 (1)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No12011	S11-No12012	S11-No12013	S11-No12014
Date Sampled			Nov 10, 2011	Nov 10, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	-	< 10	-	< 10
TRH C10-C14	50	mg/kg	-	< 50	-	< 50
TRH C15-C28	100	mg/kg	-	< 100	-	< 100
TRH C29-C36	100	mg/kg	-	< 100	-	< 100
TRH C10-36 (Total)	100	mg/kg	-	< 100	-	< 100
Volatile Organic Compounds (VOC)						
1.1-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
1.1.1-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.2-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dibromo-3-chloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dibromoethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.3-Trichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.4-Trichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.4-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
2-Butanone (MEK)	5	mg/kg	-	< 5	-	-
2-Chlorotoluene	0.5	mg/kg	-	< 0.5	-	-
2-Hexanone	5	mg/kg	-	< 5	-	-
2-Pentanone	5	mg/kg	-	< 5	-	-
4-Chlorotoluene	0.5	mg/kg	-	< 0.5	-	-
4-Methyl-2-pentanone (MIBK)	5	mg/kg	-	< 5	-	-
Benzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Bromobenzene	0.5	mg/kg	-	< 0.5	-	-
Bromodichloromethane	0.5	mg/kg	-	< 0.5	-	-
Bromoform	0.5	mg/kg	-	< 0.5	-	-
Bromomethane	5	mg/kg	-	< 5	-	-
Carbon disulfide	0.5	mg/kg	-	< 0.5	-	-
Carbon Tetrachloride	0.5	mg/kg	-	< 0.5	-	-
Chlorobenzene	0.5	mg/kg	-	< 0.5	-	-
Chloroethane	5	mg/kg	-	< 5	-	-
Chloroform	0.5	mg/kg	-	< 0.5	-	-
Chloromethane	5	mg/kg	-	< 5	-	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Dibromochloromethane	0.5	mg/kg	-	< 0.5	-	-
Dichlorodifluoromethane	5	mg/kg	-	< 5	-	-
Ethylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	< 0.5	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	< 0.5	-	-
Methylene Chloride	5	mg/kg	-	< 5	-	-
n-Butylbenzene	0.5	mg/kg	-	< 0.5	-	-

Client Sample ID			300/1/31-BH13 -2.7-2.9	300/1/31-BH13 -4.3-4.5	300/1/31-BH13 -5.8-6.0	300/1/31-BH13 -7.3-7.5 (1)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No12011	S11-No12012	S11-No12013	S11-No12014
Date Sampled			Nov 10, 2011	Nov 10, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
n-Propylbenzene	0.5	mg/kg	-	< 0.5	-	-
o-Xylene	0.5	mg/kg	-	< 0.5	-	< 0.5
p-Isopropyltoluene	0.5	mg/kg	-	< 0.5	-	-
sec-Butylbenzene	0.5	mg/kg	-	< 0.5	-	-
Styrene	0.5	mg/kg	-	< 0.5	-	-
tert-Butylbenzene	0.5	mg/kg	-	< 0.5	-	-
Tetrachloroethene	0.5	mg/kg	-	< 0.5	-	-
Toluene	0.5	mg/kg	-	< 0.5	-	< 0.5
Total m+p-Xylenes	1	mg/kg	-	< 1	-	< 1
trans-1,2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
trans-1,3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Trichloroethene	0.5	mg/kg	-	< 0.5	-	-
Trichlorofluoromethane	5	mg/kg	-	< 5	-	-
Vinyl acetate	5	mg/kg	-	< 5	-	-
Vinyl chloride	5	mg/kg	-	< 5	-	-
4-Bromofluorobenzene (surr.)	1	%	-	100	-	116
Toluene-d8 (surr.)	1	%	-	98	-	-
Pentafluorobenzene (surr.)	1	%	-	104	-	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	-	^{N04} < 0.5
TRH C6-C10	20	mg/kg	-	< 20	-	< 20
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	-	< 20	-	< 20
TRH >C10-C16	50	mg/kg	-	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50	-	< 50
TRH >C16-C34	100	mg/kg	-	< 100	-	< 100
TRH >C34-C40	100	mg/kg	-	< 100	-	< 100
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	-	< 1.5	-	< 1.5
Total BTEX	1.5	mg/kg	-	< 1.5	-	< 1.5
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	-
Total PCB	0.5	mg/kg	-	< 0.5	-	-
Dibutylchloroendate (surr.)	1	%	-	118	-	-
Speciated Phenols						
2,4-Dichlorophenol	0.5	mg/kg	-	< 0.5	-	-
2,4-Dimethylphenol	0.5	mg/kg	-	< 0.5	-	-
2,4,5-Trichlorophenol	0.5	mg/kg	-	< 0.5	-	-
2,4,6-Trichlorophenol	0.5	mg/kg	-	< 0.5	-	-
Phenol	0.5	mg/kg	-	< 0.5	-	-
2-Methylphenol (o-Cresol)	0.5	mg/kg	-	< 0.5	-	-
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	-	< 1	-	-
2-Chlorophenol	0.5	mg/kg	-	< 0.5	-	-
2-Nitrophenol	0.5	mg/kg	-	< 0.5	-	-
4-Chloro-3-methylphenol	0.5	mg/kg	-	< 0.5	-	-

Client Sample ID			300/1/31-BH13 -2.7-2.9	300/1/31-BH13 -4.3-4.5	300/1/31-BH13 -5.8-6.0	300/1/31-BH13 -7.3-7.5 (1)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No12011	S11-No12012	S11-No12013	S11-No12014
Date Sampled			Nov 10, 2011	Nov 10, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
Pentachlorophenol	1	mg/kg	-	< 1	-	-
Phenol-d5 (surr.)	1	%	-	90	-	-
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4,4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4,4'-DDT	0.2	mg/kg	-	< 0.2	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
a-Chlordane	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
g-Chlordane	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	107	-	-
Polyaromatic Hydrocarbons (PAH)						
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	-	0.7
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	1.1
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	< 1	-	1.3
Benzo(g,h,i)perylene	0.5	mg/kg	-	< 0.5	-	0.7
Chrysene	0.5	mg/kg	-	< 0.5	-	0.6
Dibenz(a,h)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	-	0.7
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
Pyrene	0.5	mg/kg	-	0.5	-	0.9
Total PAH	1	mg/kg	-	< 1	-	7.0
2-Fluorobiphenyl (surr.)	1	%	-	89	-	88
p-Terphenyl-d14 (surr.)	1	%	-	106	-	105
Cyanide (total)	1	mg/kg	-	< 1	-	-
Fluoride (soluble)	1	mg/kg	-	1.1	-	-
% Moisture	0.1	%	-	14	-	16

Client Sample ID			300/1/31-BH13 -2.7-2.9	300/1/31-BH13 -4.3-4.5	300/1/31-BH13 -5.8-6.0	300/1/31-BH13 -7.3-7.5 (1)
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-No12011	S11-No12012	S11-No12013	S11-No12014
Date Sampled			Nov 10, 2011	Nov 10, 2011	Nov 10, 2011	Nov 10, 2011
Test/Reference	LOR	Unit				
Asbestos			-	ASET Report	-	ASET Report
Heavy Metals						
Arsenic	1	mg/kg	-	1.5	-	< 1
Cadmium	0.1	mg/kg	-	0.6	-	0.1
Chromium	2	mg/kg	-	6.6	-	5.1
Copper	2	mg/kg	-	5.2	-	6.8
Lead	2	mg/kg	-	7300	-	1400
Molybdenum	1	mg/kg	-	< 1	-	-
Nickel	1	mg/kg	-	< 1	-	1.9
Selenium	2	mg/kg	-	< 2	-	-
Silver	0.1	mg/kg	-	0.8	-	-
Tin	1	mg/kg	-	3.1	-	-
Zinc	5	mg/kg	-	820	-	430
Mercury	0.05	mg/kg	-	1.6	-	0.18
Barium	5	mg/kg	-	-	-	260
Beryllium	1	mg/kg	-	-	-	< 1
Cobalt	1	mg/kg	-	-	-	1.1
Manganese	5	mg/kg	-	-	-	55
Vanadium	5	mg/kg	-	-	-	12

Client Sample ID			300/1/31-BH14 -0.1-0.3 Soil S11-No12015 Nov 10, 2011	300/1/31-BH14 -1.3-1.5 Soil S11-No12016 Nov 10, 2011	300/1/31-BH15 -0.1-0.3 Soil S11-No12017 Nov 10, 2011	300/1/31-BH15 -1.3-1.5 Soil S11-No12018 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	-	-	-	< 10
TRH C10-C14	50	mg/kg	-	-	-	< 50
TRH C15-C28	100	mg/kg	-	-	-	< 100
TRH C29-C36	100	mg/kg	-	-	-	< 100
TRH C10-36 (Total)	100	mg/kg	-	-	-	< 100
Volatile Organic Compounds (VOC)						
Benzene	0.5	mg/kg	-	-	-	< 0.5
Ethylbenzene	0.5	mg/kg	-	-	-	< 0.5
o-Xylene	0.5	mg/kg	-	-	-	< 0.5
Toluene	0.5	mg/kg	-	-	-	< 0.5
Total m+p-Xylenes	1	mg/kg	-	-	-	< 1
4-Bromofluorobenzene (surr.)	1	%	-	-	-	118
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene ^{N02}	0.5	mg/kg	-	-	-	^{N04} < 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
BTEX						
Xylenes(ortho.meta and para)	1.5	mg/kg	-	-	-	< 1.5
Total BTEX	1.5	mg/kg	-	-	-	< 1.5
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	-
Total PCB	0.5	mg/kg	-	-	< 0.5	-
Dibutylchloroendate (surr.)	1	%	-	-	109	-
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	-	-	0.07	-
4,4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4,4'-DDT	0.2	mg/kg	-	-	< 0.2	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
a-Chlordane	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-

Client Sample ID			300/1/31-BH14 -0.1-0.3 Soil S11-No12015 Nov 10, 2011	300/1/31-BH14 -1.3-1.5 Soil S11-No12016 Nov 10, 2011	300/1/31-BH15 -0.1-0.3 Soil S11-No12017 Nov 10, 2011	300/1/31-BH15 -1.3-1.5 Soil S11-No12018 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
g-Chlordane	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	0.07	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.2	mg/kg	-	-	< 0.2	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	102	-
Organophosphorus Pesticides (OP)						
Chlorpyrifos	0.5	mg/kg	-	-	< 0.5	-
Coumaphos	0.5	mg/kg	-	-	< 0.5	-
Demeton (total)	1	mg/kg	-	-	< 1	-
Diazinon	0.5	mg/kg	-	-	< 0.5	-
Dichlorvos	0.5	mg/kg	-	-	< 0.5	-
Dimethoate	0.5	mg/kg	-	-	< 0.5	-
Disulfoton	0.5	mg/kg	-	-	< 0.5	-
Ethoprop	0.5	mg/kg	-	-	< 0.5	-
Fenitrothion	0.5	mg/kg	-	-	< 0.5	-
Fensulfthion	0.5	mg/kg	-	-	< 0.5	-
Fenthion	0.5	mg/kg	-	-	< 0.5	-
Methyl azinphos	0.5	mg/kg	-	-	< 0.5	-
Malathion	0.5	mg/kg	-	-	< 0.5	-
Methyl parathion	0.5	mg/kg	-	-	< 0.5	-
Mevinphos	0.5	mg/kg	-	-	< 0.5	-
Monocrotophos	10	mg/kg	-	-	< 10	-
Parathion	0.5	mg/kg	-	-	< 0.5	-
Phorate	0.5	mg/kg	-	-	< 0.5	-
Profenofos	0.5	mg/kg	-	-	< 0.5	-
Prothiofos	0.5	mg/kg	-	-	< 0.5	-
Ronnel	0.5	mg/kg	-	-	< 0.5	-
Stirophos	0.5	mg/kg	-	-	< 0.5	-
Trichloronate	0.5	mg/kg	-	-	< 0.5	-
Triphenylphosphate (surr.)	1	%	-	-	80	-
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	-	-	< 1
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH	1	mg/kg	-	-	-	< 1
2-Fluorobiphenyl (surr.)	1	%	-	-	-	98

Client Sample ID			300/1/31-BH14 -0.1-0.3 Soil S11-No12015 Nov 10, 2011	300/1/31-BH14 -1.3-1.5 Soil S11-No12016 Nov 10, 2011	300/1/31-BH15 -0.1-0.3 Soil S11-No12017 Nov 10, 2011	300/1/31-BH15 -1.3-1.5 Soil S11-No12018 Nov 10, 2011
Sample Matrix						
mgt-LabMark Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
p-Terphenyl-d14 (surr.)	1	%	-	-	-	115
% Moisture	0.1	%	6.3	-	6.8	12
Asbestos			-	-	-	ASET Report
Heavy Metals						
Arsenic	1	mg/kg	< 1	-	< 1	< 1
Cadmium	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Chromium	2	mg/kg	< 2	-	3.7	8.8
Copper	2	mg/kg	2.2	-	4.9	24
Lead	2	mg/kg	2.7	-	6.2	100
Nickel	1	mg/kg	< 1	-	< 1	1.5
Zinc	5	mg/kg	< 5	-	7.6	59
Mercury	0.05	mg/kg	0.46	-	3.0	0.09
Barium	5	mg/kg	12	-	24	80
Beryllium	1	mg/kg	< 1	-	< 1	< 1
Cobalt	1	mg/kg	1.4	-	3.4	1.6
Manganese	5	mg/kg	70	-	170	97
Vanadium	5	mg/kg	< 5	-	6.3	21

Client Sample ID			300/1/31-BH15 -2.7-2.9 Soil S11-No12019 Nov 10, 2011	300/1/31-BH15 -4.0-4.2 Soil S11-No12020 Nov 10, 2011	300/1/31-BH15 -5.7-5.9 Soil S11-No12021 Nov 10, 2011
Sample Matrix					
mgt-LabMark Sample No.					
Date Sampled					
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	10	mg/kg	-	< 10	-
TRH C10-C14	50	mg/kg	-	< 50	-
TRH C15-C28	100	mg/kg	-	120	-
TRH C29-C36	100	mg/kg	-	< 100	-
TRH C10-36 (Total)	100	mg/kg	-	120	-
Volatile Organic Compounds (VOC)					
1.1-Dichloroethene	0.5	mg/kg	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	< 0.5	-
1.2-Dibromo-3-chloropropane	0.5	mg/kg	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	< 0.5	-
1.2.4-Trichlorobenzene	0.5	mg/kg	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-
2-Butanone (MEK)	5	mg/kg	-	< 5	-
2-Chlorotoluene	0.5	mg/kg	-	< 0.5	-
2-Hexanone	5	mg/kg	-	< 5	-
2-Pentanone	5	mg/kg	-	< 5	-
4-Chlorotoluene	0.5	mg/kg	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	5	mg/kg	-	< 5	-
Benzene	0.5	mg/kg	-	< 0.5	-
Bromobenzene	0.5	mg/kg	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	< 0.5	-
Bromoform	0.5	mg/kg	-	< 0.5	-
Bromomethane	5	mg/kg	-	< 5	-
Carbon disulfide	0.5	mg/kg	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	< 0.5	-
Chloroethane	5	mg/kg	-	< 5	-
Chloroform	0.5	mg/kg	-	< 0.5	-
Chloromethane	5	mg/kg	-	< 5	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	-	< 0.5	-
Dichlorodifluoromethane	5	mg/kg	-	< 5	-
Ethylbenzene	0.5	mg/kg	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	< 0.5	-
Methylene Chloride	5	mg/kg	-	< 5	-
n-Butylbenzene	0.5	mg/kg	-	< 0.5	-
n-Propylbenzene	0.5	mg/kg	-	< 0.5	-

Client Sample ID			300/1/31-BH15 -2.7-2.9 Soil S11-No12019 Nov 10, 2011	300/1/31-BH15 -4.0-4.2 Soil S11-No12020 Nov 10, 2011	300/1/31-BH15 -5.7-5.9 Soil S11-No12021 Nov 10, 2011
Sample Matrix					
mgt-LabMark Sample No.					
Date Sampled					
Test/Reference	LOR	Unit			
o-Xylene	0.5	mg/kg	-	< 0.5	-
p-Isopropyltoluene	0.5	mg/kg	-	< 0.5	-
sec-Butylbenzene	0.5	mg/kg	-	< 0.5	-
Styrene	0.5	mg/kg	-	< 0.5	-
tert-Butylbenzene	0.5	mg/kg	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	< 0.5	-
Toluene	0.5	mg/kg	-	< 0.5	-
Total m+p-Xylenes	1	mg/kg	-	< 1	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	< 0.5	-
Trichlorofluoromethane	5	mg/kg	-	< 5	-
Vinyl acetate	5	mg/kg	-	< 5	-
Vinyl chloride	5	mg/kg	-	< 5	-
4-Bromofluorobenzene (surr.)	1	%	-	100	-
Toluene-d8 (surr.)	1	%	-	98	-
Pentafluorobenzene (surr.)	1	%	-	104	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *					
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N03}	20	mg/kg	-	< 20	-
TRH >C10-C16	50	mg/kg	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50	-
TRH >C16-C34	100	mg/kg	-	190	-
TRH >C34-C40	100	mg/kg	-	< 100	-
BTEX					
Xylenes(ortho.meta and para)	1.5	mg/kg	-	< 1.5	-
Total BTEX	1.5	mg/kg	-	< 1.5	-
Polychlorinated Biphenyls (PCB)					
Aroclor-1016	0.5	mg/kg	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-
Total PCB	0.5	mg/kg	-	< 0.5	-
Dibutylchloroendate (surr.)	1	%	-	114	-
Speciated Phenols					
2.4-Dichlorophenol	0.5	mg/kg	-	< 0.5	-
2.4-Dimethylphenol	0.5	mg/kg	-	< 0.5	-
2.4.5-Trichlorophenol	0.5	mg/kg	-	< 0.5	-
2.4.6-Trichlorophenol	0.5	mg/kg	-	< 0.5	-
Phenol	0.5	mg/kg	-	< 0.5	-
2-Methylphenol (o-Cresol)	0.5	mg/kg	-	< 0.5	-
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	-	< 1	-
2-Chlorophenol	0.5	mg/kg	-	< 0.5	-
2-Nitrophenol	0.5	mg/kg	-	< 0.5	-
4-Chloro-3-methylphenol	0.5	mg/kg	-	< 0.5	-
Pentachlorophenol	1	mg/kg	-	< 1	-
Phenol-d5 (surr.)	1	%	-	110	-

Client Sample ID			300/1/31-BH15 -2.7-2.9 Soil S11-No12019 Nov 10, 2011	300/1/31-BH15 -4.0-4.2 Soil S11-No12020 Nov 10, 2011	300/1/31-BH15 -5.7-5.9 Soil S11-No12021 Nov 10, 2011
Sample Matrix					
mgt-LabMark Sample No.					
Date Sampled					
Test/Reference	LOR	Unit			
Organochlorine Pesticides (OC)					
4,4'-DDD	0.05	mg/kg	-	< 0.05	-
4,4'-DDE	0.05	mg/kg	-	< 0.05	-
4,4'-DDT	0.2	mg/kg	-	< 0.2	-
α-BHC	0.05	mg/kg	-	< 0.05	-
α-Chlordane	0.05	mg/kg	-	< 0.05	-
Aldrin	0.05	mg/kg	-	< 0.05	-
β-BHC	0.05	mg/kg	-	< 0.05	-
δ-BHC	0.05	mg/kg	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-
Endrin	0.05	mg/kg	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-
γ-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-
γ-Chlordane	0.05	mg/kg	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-
Tetrachloro-m-xylene (surr.)	1	%	-	100	-
Polyaromatic Hydrocarbons (PAH)					
Acenaphthene	0.5	mg/kg	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-
Anthracene	0.5	mg/kg	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	1.7	-
Benzo(a)pyrene	0.5	mg/kg	-	2.3	-
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	2.8	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	1.2	-
Chrysene	0.5	mg/kg	-	1.6	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	1.3	-
Fluorene	0.5	mg/kg	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	-	1.0	-
Naphthalene	0.5	mg/kg	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	1.3	-
Pyrene	0.5	mg/kg	-	1.8	-
Total PAH	1	mg/kg	-	15	-
2-Fluorobiphenyl (surr.)	1	%	-	105	-
p-Terphenyl-d14 (surr.)	1	%	-	130	-
Cyanide (total)	1	mg/kg	-	< 1	-
Fluoride (soluble)	1	mg/kg	-	1.4	-
% Moisture	0.1	%	-	11	-
Asbestos			-	ASET Report	-
Heavy Metals					
Arsenic	1	mg/kg	-	1.6	-

Client Sample ID			300/1/31-BH15 -2.7-2.9 Soil S11-No12019 Nov 10, 2011	300/1/31-BH15 -4.0-4.2 Soil S11-No12020 Nov 10, 2011	300/1/31-BH15 -5.7-5.9 Soil S11-No12021 Nov 10, 2011
Sample Matrix					
mgt-LabMark Sample No.					
Date Sampled					
Test/Reference	LOR	Unit			
Cadmium	0.1	mg/kg	-	< 0.1	-
Chromium	2	mg/kg	-	5.3	-
Copper	2	mg/kg	-	10	-
Lead	2	mg/kg	-	650	-
Molybdenum	1	mg/kg	-	< 1	-
Nickel	1	mg/kg	-	2.1	-
Selenium	2	mg/kg	-	< 2	-
Silver	0.1	mg/kg	-	0.2	-
Tin	1	mg/kg	-	< 1	-
Zinc	5	mg/kg	-	220	-
Mercury	0.05	mg/kg	-	0.09	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: E004 Petroleum Hydrocarbons (TPH)	Sydney	Nov 21, 2011	14 Day
Volatile Organic Compounds (VOC) - Method: E016 Volatile Organic Compounds (VOC)	Sydney	Nov 21, 2011	14 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Sydney	Nov 21, 2011	14 Day
BTEX - Method: E029/E016 BTEX	Sydney	Nov 21, 2011	14 Day
Polychlorinated Biphenyls (PCB) - Method: E013 Polychlorinated Biphenyls (PCB)	Sydney	Nov 21, 2011	14 Day
Speciated Phenols - Method: E008 Speciated Phenols	Sydney	Nov 21, 2011	14 Day
Organochlorine Pesticides (OC) - Method: E013 Organochlorine Pesticides (OC)	Sydney	Nov 21, 2011	14 Day
Organophosphorus Pesticides (OP) - Method: E014 Organophosphorus Pesticides (OP)	Sydney	Nov 21, 2011	14 Day
Polyaromatic Hydrocarbons (PAH) - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Nov 21, 2011	14 Day
Cyanide (total) - Method: E040 /E054 Total Cyanide	Sydney	Nov 21, 2011	14 Day
Fluoride (soluble) - Method: E034 /E045 Fluoride	Sydney	Nov 21, 2011	28 Day
% Moisture - Method: E005 Moisture Content	Sydney	Nov 21, 2011	28 Day
IWRG 621 Metals : Metals M12 - Method: E022 Acid Extractable metals in Soils & E026 Mercury	Sydney	Nov 21, 2011	28 Day
Metals M13 - Method: E022 Acid Extractable metals in Soils & E026 Mercury	Sydney	Nov 21, 2011	28 Day

Company Name: SMEC Testing Services Pty Ltd
Address: 14/1 Cowpasture Place
Wetherill Park
NSW 2164

Order No.: 319060
Report #: 02 9756 2166
Phone: 02 9756 1137
Fax: 02 9756 1137

Received: Nov 18, 2011 5:00 PM
Due: Nov 28, 2011 4:00 PM
Priority: 5 Day
Contact name: David Yonge

Client Job No.: 18435/1017C

mgt-LabMark Client Manager: Onur Mehmet

Sample Detail													
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
Laboratory where analysis is conducted													
Melbourne Laboratory - NATA Site #1261													
Sydney Laboratory - NATA Site #1645													
300/1/31-BH1-0.0-0.2	Nov 10, 2011		Soil	S11-No11971	X	X	X	X	X	X	X	X	X
300/1/31-BH1-0.6-0.7	Nov 10, 2011		Soil	S11-No11972									
300/1/31-BH2-0.0-0.2	Nov 10, 2011		Soil	S11-No11973	X								
300/1/31-BH2-0.5-0.7	Nov 10, 2011		Soil	S11-No11974									
300/1/31-BH3-0.0-0.2	Nov 11, 2011		Soil	S11-No11975	X								
300/1/31-BH3-0.5-0.7	Nov 11, 2011		Soil	S11-No11976									
300/1/31-BH4-0.0-0.2	Nov 11, 2011		Soil	S11-No11977									
300/1/31-BH4-0.0-0.2 (1)	Nov 11, 2011		Soil	S11-No11978	X								
mgt-LabMark Suite 4													
Vic EPA Short Screen													
mgt-LabMark Suite 15													
Volatile Organic Compounds (VOC)													
Metals M13													
HOLD													
CANCELLED													
ASET Reporting Fee													
Asbestos													
% Moisture													

Company Name: SMEC Testing Services Pty Ltd
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Contact name: David Yonge

Client Job No.: 18435/1017C

mgt-LabMark Client Manager: Onur Mehmet

Sample Detail				mgt-LabMark Suite 4			
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site #1261							
Sydney Laboratory - NATA Site #1645							
300/1/31-BH4-0.0-0.2 (3)	Nov 11, 2011	Soil	S11-No11979	X	X	X	X
300/1/31-BH4-0.5-0.7	Nov 11, 2011	Soil	S11-No11980	X			
300/1/31-BH4-1.1-1.3	Nov 11, 2011	Soil	S11-No11981				
300/1/31-BH5-0.0-0.2	Nov 11, 2011	Soil	S11-No11982				
300/1/31-BH5-1.3-1.5	Nov 11, 2011	Soil	S11-No11983	X			
300/1/31-BH5-2.7-2.9 (1)	Nov 11, 2011	Soil	S11-No11984	X			X
300/1/31-BH5-2.7-2.9 (2)	Nov 11, 2011	Soil	S11-No11985				
300/1/31-BH5-3.7-3.9	Nov 11, 2011	Soil	S11-No11986				
300/1/31-BH6-0.0-0.2	Nov 11, 2011	Soil	S11-No11987	X			
Volatile Organic Compounds (VOC)					X		
Metals M13					X	X	X
HOLD					X		
CANCELLED					X		
ASET Reporting Fee					X		
Asbestos					X		
% Moisture							
Vic EPA Short Screen							
mgt-LabMark Suite 15							

Company Name: SMEC Testing Services Pty Ltd
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NSW 2164

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Received: Nov 18, 2011 5:00 PM
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Priority: 5 Day
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Client Job No.: 18435/1017C

mgt-LabMark Client Manager: Onur Mehmet

Sample Detail	Laboratory where analysis is conducted						X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Company Name: SMEC Testing Services Pty Ltd
Address: 14/1 Cowpasture Place
Wetherill Park
NSW 2164

Order No.: 319060
Report #: 02 9756 2166
Phone: 02 9756 1137
Fax: 02 9756 1137

Received: Nov 18, 2011 5:00 PM
Due: Nov 28, 2011 4:00 PM
Priority: 5 Day
Contact name: David Yonge

Client Job No.: 18435/1017C

mgt-LabMark Client Manager: Onur Mehmet

Sample Detail				mgt-LabMark Suite 4			
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site #1261							
Sydney Laboratory - NATA Site #1645							
300/1/31-BH10 -0.0-0.2 (1)	Nov 10, 2011	Soil	S11-No11997	X		X	
300/1/31-BH10 -0.0-0.2 (3)	Nov 10, 2011	Soil	S11-No11998				
300/1/31-BH10 -1.0-1.3	Nov 10, 2011	Soil	S11-No11999	X			X
300/1/31-BH10 -2.7-2.9	Nov 10, 2011	Soil	S11-No12000				
300/1/31-BH11 -0.0-0.2	Nov 10, 2011	Soil	S11-No12001				
300/1/31-BH11 -1.3-1.5	Nov 10, 2011	Soil	S11-No12002	X			
300/1/31-BH11 -4.3-4.5	Nov 10, 2011	Soil	S11-No12003	X			X
300/1/31-BH11 -5.7-5.9	Nov 10, 2011	Soil	S11-No12004				
300/1/31-BH11 -8.6-8.8	Nov 10, 2011	Soil	S11-No12005	X			X
Volatile Organic Compounds (VOC)						X	
Metals M13						X	
HOLD						X	
CANCELLED						X	
ASET Reporting Fee						X	
Asbestos						X	
% Moisture						X	
Vic EPA Short Screen						X	
mgt-LabMark Suite 15						X	
Metals M13						X	
HOLD						X	
CANCELLED						X	
ASET Reporting Fee						X	
Asbestos						X	
% Moisture						X	

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Client Job No.: 18435/1017C

mgt-LabMark Client Manager: Onur Mehmet

Sample Detail				mgt-LabMark Suite 4			
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site #1261							
Sydney Laboratory - NATA Site #1645							
300/1/31-BH12 -0.1-0.3	Nov 10, 2011	Soil	S11-No12006	X	X	X	X
300/1/31-BH12 -1.3-1.5	Nov 10, 2011	Soil	S11-No12007	X		X	
300/1/31-BH12 -4.3-4.5	Nov 10, 2011	Soil	S11-No12008	X			X
300/1/31-BH13 -0.0-0.2	Nov 10, 2011	Soil	S11-No12009		X		
300/1/31-BH13 -1.3-1.5	Nov 10, 2011	Soil	S11-No12010	X		X	
300/1/31-BH13 -2.7-2.9	Nov 10, 2011	Soil	S11-No12011		X		
300/1/31-BH13 -4.3-4.5	Nov 10, 2011	Soil	S11-No12012	X		X	
300/1/31-BH13 -5.8-6.0	Nov 10, 2011	Soil	S11-No12013		X		
300/1/31-BH13 -7.3-7.5 (1)	Nov 10, 2011	Soil	S11-No12014	X			X
Volatile Organic Compounds (VOC)					X		
Metals M13					X		
HOLD					X		
CANCELLED					X		
ASET Reporting Fee					X		
Asbestos					X		
% Moisture					X		
Vic EPA Short Screen						X	
mgt-LabMark Suite 15					X		

Company Name: SMEC Testing Services Pty Ltd
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NSW 2164

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Received: Nov 18, 2011 5:00 PM
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Priority: 5 Day
Contact name: David Yonge

Client Job No.: 18435/1017C

mgt-LabMark Client Manager: Onur Mehmet

Sample Detail											
Laboratory where analysis is conducted											
Melbourne Laboratory - NATA Site #1261											
Sydney Laboratory - NATA Site #1645											
300/1/31-BH14 -0.1-0.3	Nov 10, 2011	Soil	S11-No12015	X	X	X	X	X	X	X	X
300/1/31-BH14 -1.3-1.5	Nov 10, 2011	Soil	S11-No12016								
300/1/31-BH15 -0.1-0.3	Nov 10, 2011	Soil	S11-No12017	X				X			
300/1/31-BH15 -1.3-1.5	Nov 10, 2011	Soil	S11-No12018	X	X	X	X			X	
300/1/31-BH15 -2.7-2.9	Nov 10, 2011	Soil	S11-No12019					X			
300/1/31-BH15 -4.0-4.2	Nov 10, 2011	Soil	S11-No12020	X	X				X		
300/1/31-BH15 -5.7-5.9	Nov 10, 2011	Soil	S11-No12021					X			
mgt-LabMark Suite 4											
Vic EPA Short Screen											
mgt-LabMark Suite 15											
Volatile Organic Compounds (VOC)											
Metals M13											
HOLD											
CANCELLED											
ASET Reporting Fee											
Asbestos											
% Moisture											

mgt-LabMark Internal Quality Control Review

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 PQLs are matrix dependant. Quoted PQLs 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 Acknowledgment

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 an RPD

UNITS

mg/kg: milligrams per Kilogram	mg/L: milligrams per litre
µg/L: micrograms per litre	ppm: Parts per million
ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	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 client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
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 was performed on samples not pertaining to this report, however QC is representative of the sequence or batch that client samples were analysed within

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, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene 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's.
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 RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)						
TRH C6-C9	mg/kg	< 10		10	Pass	
TRH C10-C14	mg/kg	< 50		50	Pass	
TRH C15-C28	mg/kg	< 100		100	Pass	
TRH C29-C36	mg/kg	< 100		100	Pass	
Method Blank						
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)						
1.1-Dichloroethene	mg/kg	< 0.5		0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5		0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5		0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5		0.5	Pass	
1.2-Dibromo-3-chloropropane	mg/kg	< 0.5		0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5		0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5		0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5		0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5		0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5		0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5		0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5		0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5		0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5		0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5		0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5		0.5	Pass	
2-Butanone (MEK)	mg/kg	< 5		5	Pass	
2-Chlorotoluene	mg/kg	< 0.5		0.5	Pass	
2-Hexanone	mg/kg	< 5		5	Pass	
2-Pentanone	mg/kg	< 5		5	Pass	
4-Chlorotoluene	mg/kg	< 0.5		0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 5		5	Pass	
Benzene	mg/kg	< 0.5		0.5	Pass	
Bromobenzene	mg/kg	< 0.5		0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5		0.5	Pass	
Bromoform	mg/kg	< 0.5		0.5	Pass	
Bromomethane	mg/kg	< 5		5	Pass	
Carbon disulfide	mg/kg	< 0.5		0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5		0.5	Pass	
Chlorobenzene	mg/kg	< 0.5		0.5	Pass	
Chloroethane	mg/kg	< 5		5	Pass	
Chloroform	mg/kg	< 0.5		0.5	Pass	
Chloromethane	mg/kg	< 5		5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5		0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5		0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5		0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 5		5	Pass	
Ethylbenzene	mg/kg	< 0.5		0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5		0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5		0.5	Pass	
Methylene Chloride	mg/kg	< 5		5	Pass	
n-Butylbenzene	mg/kg	< 0.5		0.5	Pass	
n-Propylbenzene	mg/kg	< 0.5		0.5	Pass	
o-Xylene	mg/kg	< 0.5		0.5	Pass	
p-Isopropyltoluene	mg/kg	< 0.5		0.5	Pass	
sec-Butylbenzene	mg/kg	< 0.5		0.5	Pass	
Styrene	mg/kg	< 0.5		0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
tert-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.5			0.5	Pass	
Total m+p-Xylenes	mg/kg	< 1			1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 5			5	Pass	
Vinyl acetate	mg/kg	< 5			5	Pass	
Vinyl chloride	mg/kg	< 5			5	Pass	
Method Blank							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH C6-C10 less BTEX (F1)	mg/kg	< 20			20	Pass	
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							
BTEX E029/E016 BTEX							
Xylenes(ortho.meta and para)	mg/kg	< 1.5			1.5	Pass	
Total BTEX	mg/kg	< 1.5			1.5	Pass	
Method Blank							
Polychlorinated Biphenyls (PCB) E013 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	
Method Blank							
Speciated Phenols E008 Speciated Phenols							
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,6-Trichlorophenol	mg/kg	< 0.5			0.5	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.5			0.5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 1			1	Pass	
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2-Nitrophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 0.5			0.5	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Method Blank							
Organochlorine Pesticides (OC) E013 Organochlorine Pesticides (OC)							
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	< 0.2			0.2	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
a-Chlordane	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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
g-Chlordane	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	
Method Blank							
Organophosphorus Pesticides (OP) E014 Organophosphorus Pesticides (OP)							
Chlorpyrifos	mg/kg	< 0.5			0.5	Pass	
Coumaphos	mg/kg	< 0.5			0.5	Pass	
Demeton (total)	mg/kg	< 1			1	Pass	
Diazinon	mg/kg	< 0.5			0.5	Pass	
Dichlorvos	mg/kg	< 0.5			0.5	Pass	
Dimethoate	mg/kg	< 0.5			0.5	Pass	
Disulfoton	mg/kg	< 0.5			0.5	Pass	
Ethoprop	mg/kg	< 0.5			0.5	Pass	
Fenitrothion	mg/kg	< 0.5			0.5	Pass	
Fensulfothion	mg/kg	< 0.5			0.5	Pass	
Fenthion	mg/kg	< 0.5			0.5	Pass	
Methyl azinphos	mg/kg	< 0.5			0.5	Pass	
Malathion	mg/kg	< 0.5			0.5	Pass	
Methyl parathion	mg/kg	< 0.5			0.5	Pass	
Mevinphos	mg/kg	< 0.5			0.5	Pass	
Monocrotophos	mg/kg	< 10			10	Pass	
Parathion	mg/kg	< 0.5			0.5	Pass	
Phorate	mg/kg	< 0.5			0.5	Pass	
Profenofos	mg/kg	< 0.5			0.5	Pass	
Prothiofos	mg/kg	< 0.5			0.5	Pass	
Ronnel	mg/kg	< 0.5			0.5	Pass	
Stirophos	mg/kg	< 0.5			0.5	Pass	
Trichloronate	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polyaromatic Hydrocarbons (PAH) E007 Polyaromatic Hydrocarbons (PAH)							
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)fluoranthene & Benzo(k)fluoranthene	mg/kg	< 1			1	Pass	
Benzo(g,h,i)perylene	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							
Cyanide (total)	mg/kg	< 1			1	Pass	
Fluoride (soluble)	mg/kg	< 1			1	Pass	
Method Blank							
IWRG 621 Metals : Metals M12 E022 Acid Extractable metals in Soils & E026 Mercury							

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	mg/kg	< 1		1	Pass	
Cadmium	mg/kg	< 0.1		0.1	Pass	
Chromium	mg/kg	< 2		2	Pass	
Copper	mg/kg	< 2		2	Pass	
Lead	mg/kg	< 2		2	Pass	
Molybdenum	mg/kg	< 1		1	Pass	
Nickel	mg/kg	< 1		1	Pass	
Selenium	mg/kg	< 2		2	Pass	
Silver	mg/kg	< 0.1		0.1	Pass	
Tin	mg/kg	< 1		1	Pass	
Zinc	mg/kg	< 5		5	Pass	
Mercury	mg/kg	< 0.05		0.05	Pass	
Barium	mg/kg	< 5		5	Pass	
Beryllium	mg/kg	< 1		1	Pass	
Cobalt	mg/kg	< 1		1	Pass	
Manganese	mg/kg	< 5		5	Pass	
Vanadium	mg/kg	< 5		5	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)						
TRH C6-C9	%	83		70-130	Pass	
TRH C10-C14	%	99		70-130	Pass	
LCS - % Recovery						
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)						
1.1-Dichloroethene	%	96		70-130	Pass	
1.1.1-Trichloroethane	%	95		70-130	Pass	
1.1.1.2-Tetrachloroethane	%	94		70-130	Pass	
1.1.2-Trichloroethane	%	97		70-130	Pass	
1.2-Dibromo-3-chloropropane	%	94		70-130	Pass	
1.2-Dibromoethane	%	92		70-130	Pass	
1.2-Dichlorobenzene	%	99		70-130	Pass	
1.2-Dichloroethane	%	88		70-130	Pass	
1.2-Dichloropropane	%	99		70-130	Pass	
1.2.3-Trichloropropane	%	95		70-130	Pass	
1.2.4-Trichlorobenzene	%	99		70-130	Pass	
1.2.4-Trimethylbenzene	%	100		70-130	Pass	
1.3-Dichlorobenzene	%	99		70-130	Pass	
1.3-Dichloropropane	%	96		70-130	Pass	
1.3.5-Trimethylbenzene	%	100		70-130	Pass	
1.4-Dichlorobenzene	%	98		70-130	Pass	
2-Butanone (MEK)	%	96		70-130	Pass	
2-Chlorotoluene	%	100		70-130	Pass	
2-Hexanone	%	94		70-130	Pass	
2-Pentanone	%	105		70-130	Pass	
4-Chlorotoluene	%	100		70-130	Pass	
4-Methyl-2-pentanone (MIBK)	%	95		70-130	Pass	
Benzene	%	99		70-130	Pass	
Bromobenzene	%	100		70-130	Pass	
Bromodichloromethane	%	93		70-130	Pass	
Bromoform	%	89		70-130	Pass	
Bromomethane	%	106		70-130	Pass	
Carbon disulfide	%	93		70-130	Pass	
Carbon Tetrachloride	%	93		70-130	Pass	
Chlorobenzene	%	95		70-130	Pass	
Chloroethane	%	102		70-130	Pass	
Chloroform	%	97		70-130	Pass	
Chloromethane	%	98		70-130	Pass	
cis-1.2-Dichloroethene	%	100		70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
cis-1,3-Dichloropropene	%	96			70-130	Pass	
Dibromochloromethane	%	92			70-130	Pass	
Dichlorodifluoromethane	%	93			70-130	Pass	
Ethylbenzene	%	104			70-130	Pass	
Hexachlorobutadiene	%	98			70-130	Pass	
Isopropyl benzene (Cumene)	%	95			70-130	Pass	
Methylene Chloride	%	94			70-130	Pass	
n-Butylbenzene	%	103			70-130	Pass	
n-Propylbenzene	%	101			70-130	Pass	
o-Xylene	%	111			70-130	Pass	
p-Isopropyltoluene	%	101			70-130	Pass	
sec-Butylbenzene	%	102			70-130	Pass	
Styrene	%	98			70-130	Pass	
tert-Butylbenzene	%	100			70-130	Pass	
Tetrachloroethene	%	95			70-130	Pass	
Toluene	%	100			70-130	Pass	
Total m+p-Xylenes	%	104			70-130	Pass	
trans-1,2-Dichloroethene	%	99			70-130	Pass	
trans-1,3-Dichloropropene	%	96			70-130	Pass	
Trichloroethene	%	96			70-130	Pass	
Trichlorofluoromethane	%	96			70-130	Pass	
Vinyl acetate	%	93			70-130	Pass	
Vinyl chloride	%	91			70-130	Pass	
LCS - % Recovery							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
Naphthalene	%	98			70-130	Pass	
TRH C6-C10	%	88			70-130	Pass	
TRH >C10-C16	%	94			70-130	Pass	
LCS - % Recovery							
BTEX E029/E016 BTEX							
Xylenes(ortho.meta and para)	%	100			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls (PCB) E013 Polychlorinated Biphenyls (PCB)							
Aroclor-1260	%	79			70-130	Pass	
LCS - % Recovery							
Speciated Phenols E008 Speciated Phenols							
2,4-Dichlorophenol	%	92			70-130	Pass	
2,4-Dimethylphenol	%	93			70-130	Pass	
2,4,5-Trichlorophenol	%	96			70-130	Pass	
2,4,6-Trichlorophenol	%	82			70-130	Pass	
Phenol	%	96			70-130	Pass	
2-Methylphenol (o-Cresol)	%	94			70-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	93			70-130	Pass	
2-Chlorophenol	%	97			70-130	Pass	
2-Nitrophenol	%	88			70-130	Pass	
4-Chloro-3-methylphenol	%	85			70-130	Pass	
Pentachlorophenol	%	121			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides (OC) E013 Organochlorine Pesticides (OC)							
4,4'-DDD	%	122			70-130	Pass	
4,4'-DDE	%	97			70-130	Pass	
4,4'-DDT	%	102			70-130	Pass	
a-BHC	%	112			70-130	Pass	
a-Chlordane	%	111			70-130	Pass	
Aldrin	%	106			70-130	Pass	
b-BHC	%	111			70-130	Pass	
d-BHC	%	121			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dieldrin	%	112			70-130	Pass	
Endosulfan I	%	108			70-130	Pass	
Endosulfan II	%	114			70-130	Pass	
Endosulfan sulphate	%	93			70-130	Pass	
Endrin	%	102			70-130	Pass	
Endrin aldehyde	%	117			70-130	Pass	
Endrin ketone	%	115			70-130	Pass	
g-BHC (Lindane)	%	104			70-130	Pass	
g-Chlordane	%	110			70-130	Pass	
Heptachlor	%	106			70-130	Pass	
Heptachlor epoxide	%	109			70-130	Pass	
Hexachlorobenzene	%	112			70-130	Pass	
Methoxychlor	%	114			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides (OP) E014 Organophosphorus Pesticides (OP)							
Chlorpyrifos	%	93			70-130	Pass	
Coumaphos	%	92			70-130	Pass	
Demeton (total)	%	115			70-130	Pass	
Diazinon	%	89			70-130	Pass	
Dichlorvos	%	104			70-130	Pass	
Dimethoate	%	112			70-130	Pass	
Disulfoton	%	84			70-130	Pass	
Ethoprop	%	110			70-130	Pass	
Fenitrothion	%	97			70-130	Pass	
Fensulfothion	%	74			70-130	Pass	
Fenthion	%	96			70-130	Pass	
Methyl azinphos	%	99			70-130	Pass	
Malathion	%	92			70-130	Pass	
Methyl parathion	%	113			70-130	Pass	
Mevinphos	%	103			70-130	Pass	
Monocrotophos	%	120			70-130	Pass	
Parathion	%	88			70-130	Pass	
Phorate	%	105			70-130	Pass	
Profenofos	%	87			70-130	Pass	
Prothiofos	%	86			70-130	Pass	
Ronnel	%	86			70-130	Pass	
Stirophos	%	87			70-130	Pass	
Trichloronate	%	99			70-130	Pass	
LCS - % Recovery							
Polyaromatic Hydrocarbons (PAH) E007 Polyaromatic Hydrocarbons (PAH)							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	85			70-130	Pass	
Anthracene	%	94			70-130	Pass	
Benz(a)anthracene	%	79			70-130	Pass	
Benzo(a)pyrene	%	88			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	%	82			70-130	Pass	
Benzo(g,h,i)perylene	%	81			70-130	Pass	
Chrysene	%	87			70-130	Pass	
Dibenz(a,h)anthracene	%	72			70-130	Pass	
Fluoranthene	%	82			70-130	Pass	
Fluorene	%	87			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	72			70-130	Pass	
Naphthalene	%	94			70-130	Pass	
Phenanthrene	%	97			70-130	Pass	
Pyrene	%	89			70-130	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Cyanide (total)	%	123			70-130	Pass		
Fluoride (soluble)	%	82			70-130	Pass		
LCS - % Recovery								
IWRG 621 Metals : Metals M12 E022 Acid Extractable metals in Soils & E026 Mercury								
Arsenic	%	70			70-130	Pass		
Cadmium	%	77			70-130	Pass		
Chromium	%	102			70-130	Pass		
Copper	%	88			70-130	Pass		
Lead	%	89			70-130	Pass		
Molybdenum	%	103			70-130	Pass		
Nickel	%	96			70-130	Pass		
Selenium	%	94			70-130	Pass		
Silver	%	98			70-130	Pass		
Tin	%	110			70-130	Pass		
Zinc	%	85			70-130	Pass		
Mercury	%	90			70-130	Pass		
Barium	%	104			70-130	Pass		
Beryllium	%	104			70-130	Pass		
Cobalt	%	96			70-130	Pass		
Manganese	%	101			70-130	Pass		
Vanadium	%	107			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Polychlorinated Biphenyls (PCB)				Result 1				
Aroclor-1260	S11-No11971	CP	%	107		70-130	Pass	
Spike - % Recovery								
Organophosphorus Pesticides (OP)				Result 1				
Chlorpyrifos	S11-No11971	CP	%	102		70-130	Pass	
Coumaphos	S11-No11971	CP	%	108		70-130	Pass	
Demeton (total)	S11-No11971	CP	%	117		70-130	Pass	
Diazinon	S11-No11971	CP	%	95		70-130	Pass	
Dichlorvos	S11-No11971	CP	%	97		70-130	Pass	
Dimethoate	S11-No11971	CP	%	118		70-130	Pass	
Disulfoton	S11-No11971	CP	%	83		70-130	Pass	
Ethoprop	S11-No11971	CP	%	114		70-130	Pass	
Fenitrothion	S11-No11971	CP	%	119		70-130	Pass	
Fensulfothion	S11-No11971	CP	%	124		70-130	Pass	
Fenthion	S11-No11971	CP	%	104		70-130	Pass	
Methyl azinphos	S11-No11971	CP	%	107		70-130	Pass	
Malathion	S11-No11971	CP	%	107		70-130	Pass	
Methyl parathion	S11-No11971	CP	%	115		70-130	Pass	
Mevinphos	S11-No11971	CP	%	107		70-130	Pass	
Monocrotophos	S11-No11971	CP	%	106		70-130	Pass	
Parathion	S11-No11971	CP	%	100		70-130	Pass	
Phorate	S11-No11971	CP	%	113		70-130	Pass	
Profenofos	S11-No11971	CP	%	114		70-130	Pass	
Prothiofos	S11-No11971	CP	%	111		70-130	Pass	
Ronnel	S11-No11971	CP	%	84		70-130	Pass	
Stirophos	S11-No11971	CP	%	106		70-130	Pass	
Trichloronate	S11-No11971	CP	%	108		70-130	Pass	
Spike - % Recovery								
IWRG 621 Metals : Metals M12				Result 1				
Arsenic	S11-No11971	CP	%	92		70-130	Pass	
Cadmium	S11-No11971	CP	%	87		70-130	Pass	
Chromium	S11-No11971	CP	%	76		70-130	Pass	
Copper	S11-No11971	CP	%	74		70-130	Pass	
Lead	S11-No11971	CP	%	80		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Nickel	S11-No11971	CP	%	75		70-130	Pass	
Barium	S11-No11971	CP	%	85		70-130	Pass	
Beryllium	S11-No11971	CP	%	109		70-130	Pass	
Cobalt	S11-No11971	CP	%	84		70-130	Pass	
Manganese	S11-No11971	CP	%	85		70-130	Pass	
Vanadium	S11-No11971	CP	%	71		70-130	Pass	
Spike - % Recovery								
				Result 1				
Cyanide (total)	S11-No11366	NCP	%	122		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	S11-No12002	CP	%	89		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1				
TRH >C10-C16	S11-No12002	CP	%	90		70-130	Pass	
Spike - % Recovery								
Polychlorinated Biphenyls (PCB)				Result 1				
Aroclor-1260	S11-No12002	CP	%	86		70-130	Pass	
Spike - % Recovery								
Speciated Phenols				Result 1				
2,4-Dichlorophenol	S11-No12002	CP	%	99		70-130	Pass	
2,4-Dimethylphenol	S11-No12002	CP	%	91		70-130	Pass	
2,4,5-Trichlorophenol	S11-No12002	CP	%	99		70-130	Pass	
2,4,6-Trichlorophenol	S11-No12002	CP	%	87		70-130	Pass	
Phenol	S11-No12002	CP	%	101		70-130	Pass	
2-Methylphenol (o-Cresol)	S11-No12002	CP	%	96		70-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S11-No12002	CP	%	95		70-130	Pass	
2-Chlorophenol	S11-No12002	CP	%	100		70-130	Pass	
2-Nitrophenol	S11-No12002	CP	%	97		70-130	Pass	
4-Chloro-3-methylphenol	S11-No12002	CP	%	97		70-130	Pass	
Pentachlorophenol	S11-No12002	CP	%	109		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides (OC)				Result 1				
4,4'-DDD	S11-No12002	CP	%	124		70-130	Pass	
4,4'-DDE	S11-No12002	CP	%	96		70-130	Pass	
4,4'-DDT	S11-No12002	CP	%	100		70-130	Pass	
a-BHC	S11-No12002	CP	%	105		70-130	Pass	
a-Chlordane	S11-No12002	CP	%	108		70-130	Pass	
Aldrin	S11-No12002	CP	%	95		70-130	Pass	
b-BHC	S11-No12002	CP	%	94		70-130	Pass	
d-BHC	S11-No12002	CP	%	110		70-130	Pass	
Dieldrin	S11-No12002	CP	%	108		70-130	Pass	
Endosulfan I	S11-No12002	CP	%	100		70-130	Pass	
Endosulfan II	S11-No12002	CP	%	107		70-130	Pass	
Endosulfan sulphate	S11-No12002	CP	%	98		70-130	Pass	
Endrin	S11-No12002	CP	%	101		70-130	Pass	
Endrin aldehyde	S11-No12002	CP	%	119		70-130	Pass	
Endrin ketone	S11-No12002	CP	%	115		70-130	Pass	
g-BHC (Lindane)	S11-No12002	CP	%	96		70-130	Pass	
g-Chlordane	S11-No12002	CP	%	98		70-130	Pass	
Heptachlor	S11-No12002	CP	%	100		70-130	Pass	
Heptachlor epoxide	S11-No12002	CP	%	101		70-130	Pass	
Hexachlorobenzene	S11-No12002	CP	%	101		70-130	Pass	
Methoxychlor	S11-No12002	CP	%	117		70-130	Pass	
Spike - % Recovery								
Polyaromatic Hydrocarbons (PAH)				Result 1				
Acenaphthene	S11-No12002	CP	%	103		70-130	Pass	
Acenaphthylene	S11-No12002	CP	%	105		70-130	Pass	
Anthracene	S11-No12002	CP	%	106		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	S11-No12002	CP	%	83		70-130	Pass	
Benzo(a)pyrene	S11-No12002	CP	%	104		70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S11-No12002	CP	%	94		70-130	Pass	
Benzo(g,h,i)perylene	S11-No12002	CP	%	103		70-130	Pass	
Chrysene	S11-No12002	CP	%	98		70-130	Pass	
Dibenz(a,h)anthracene	S11-No12002	CP	%	90		70-130	Pass	
Fluoranthene	S11-No12002	CP	%	71		70-130	Pass	
Fluorene	S11-No12002	CP	%	100		70-130	Pass	
Indeno(1,2,3-cd)pyrene	S11-No12002	CP	%	95		70-130	Pass	
Naphthalene	S11-No12002	CP	%	105		70-130	Pass	
Phenanthrene	S11-No12002	CP	%	75		70-130	Pass	
Pyrene	S11-No12002	CP	%	87		70-130	Pass	
Spike - % Recovery								
IWRG 621 Metals : Metals M12				Result 1				
Arsenic	S11-No12005	CP	%	72		70-130	Pass	
Cadmium	S11-No12005	CP	%	78		70-130	Pass	
Chromium	S11-No12005	CP	%	97		70-130	Pass	
Copper	S11-No12005	CP	%	93		70-130	Pass	
Lead	S11-No12005	CP	%	119		70-130	Pass	
Nickel	S11-No12005	CP	%	95		70-130	Pass	
Zinc	S11-No12005	CP	%	99		70-130	Pass	
Mercury	S11-No12005	CP	%	98		70-130	Pass	
Barium	S11-No12005	CP	%	111		70-130	Pass	
Beryllium	S11-No12005	CP	%	105		70-130	Pass	
Cobalt	S11-No12005	CP	%	94		70-130	Pass	
Manganese	S11-No12005	CP	%	103		70-130	Pass	
Vanadium	S11-No12005	CP	%	106		70-130	Pass	
Spike - % Recovery								
IWRG 621 Metals : Metals M12				Result 1				
Arsenic	S11-No12007	CP	%	80		70-130	Pass	
Cadmium	S11-No12007	CP	%	94		70-130	Pass	
Copper	S11-No12007	CP	%	99		70-130	Pass	
Molybdenum	S11-No12007	CP	%	82		70-130	Pass	
Nickel	S11-No12007	CP	%	104		70-130	Pass	
Silver	S11-No12007	CP	%	105		70-130	Pass	
Zinc	S11-No12007	CP	%	95		70-130	Pass	
Mercury	S11-No12007	CP	%	102		70-130	Pass	
Barium	S11-No12007	CP	%	74		70-130	Pass	
Beryllium	S11-No12007	CP	%	107		70-130	Pass	
Cobalt	S11-No12007	CP	%	101		70-130	Pass	
Vanadium	S11-No12007	CP	%	73		70-130	Pass	
Spike - % Recovery								
				Result 1				
Fluoride (soluble)	S11-No12012	CP	%	93		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	S11-No12020	CP	%	78		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1				
TRH >C10-C16	S11-No12020	CP	%	75		70-130	Pass	
Spike - % Recovery								
Polychlorinated Biphenyls (PCB)				Result 1				
Aroclor-1260	S11-No12020	CP	%	98		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides (OC)				Result 1				
4,4'-DDD	S11-No12020	CP	%	123		70-130	Pass	
4,4'-DDE	S11-No12020	CP	%	105		70-130	Pass	
4,4'-DDT	S11-No12020	CP	%	116		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
a-BHC	S11-No12020	CP	%	121			70-130	Pass	
a-Chlordane	S11-No12020	CP	%	102			70-130	Pass	
Aldrin	S11-No12020	CP	%	95			70-130	Pass	
b-BHC	S11-No12020	CP	%	93			70-130	Pass	
d-BHC	S11-No12020	CP	%	112			70-130	Pass	
Dieldrin	S11-No12020	CP	%	106			70-130	Pass	
Endosulfan I	S11-No12020	CP	%	105			70-130	Pass	
Endosulfan II	S11-No12020	CP	%	107			70-130	Pass	
Endosulfan sulphate	S11-No12020	CP	%	99			70-130	Pass	
Endrin	S11-No12020	CP	%	103			70-130	Pass	
Endrin aldehyde	S11-No12020	CP	%	108			70-130	Pass	
Endrin ketone	S11-No12020	CP	%	112			70-130	Pass	
g-BHC (Lindane)	S11-No12020	CP	%	94			70-130	Pass	
g-Chlordane	S11-No12020	CP	%	97			70-130	Pass	
Heptachlor	S11-No12020	CP	%	98			70-130	Pass	
Heptachlor epoxide	S11-No12020	CP	%	101			70-130	Pass	
Hexachlorobenzene	S11-No12020	CP	%	102			70-130	Pass	
Methoxychlor	S11-No12020	CP	%	115			70-130	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides (OC)				Result 1	Result 2	RPD			
4,4'-DDD	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDE	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDT	S11-No11971	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
a-BHC	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-Chlordane	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-Chlordane	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S11-No11971	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S11-No11971	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides (OP)				Result 1	Result 2	RPD			
Chlorpyrifos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Coumaphos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton (total)	S11-No11971	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Diazinon	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorvos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethoate	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Disulfoton	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethoprop	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fenitrothion	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fensulfothion	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenthion	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl azinphos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Malathion	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl parathion	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Mevinphos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Monocrotophos	S11-No11971	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Parathion	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phorate	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Profenofos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Prothiofos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ronnel	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Stirophos	S11-No11971	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloronate	S11-No11971	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	S11-No11973	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
Benzene	S11-No11973	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	S11-No11973	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
o-Xylene	S11-No11973	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Toluene	S11-No11973	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total m+p-Xylenes	S11-No11973	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
TRH C6-C10	S11-No11973	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S11-No11973	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Xylenes(ortho.meta and para)	S11-No11973	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Total BTEX	S11-No11973	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	S11-No11366	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S11-No12002	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C15-C28	S11-No12002	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH C29-C36	S11-No12002	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
TRH >C10-C16	S11-No12002	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S11-No12002	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S11-No12002	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Speciated Phenols				Result 1	Result 2	RPD			
2,4-Dichlorophenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2,4-Dimethylphenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2,4,5-Trichlorophenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2,4,6-Trichlorophenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S11-No12002	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2-Chlorophenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Nitrophenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S11-No12002	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides (OC)				Result 1	Result 2	RPD			
4,4'-DDD	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDE	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDT	S11-No12002	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
a-BHC	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-Chlordane	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-Chlordane	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S11-No12002	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S11-No12002	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Acenaphthene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	28	30%	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S11-No12002	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Benzo(g,h,i)perylene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S11-No12002	CP	mg/kg	1.0	0.6	47	30%	Fail	Q15
Fluorene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S11-No12002	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S11-No12002	CP	mg/kg	1.0	< 0.5	75	30%	Fail	Q15
Pyrene	S11-No12002	CP	mg/kg	0.8	0.6	29	30%	Pass	
Duplicate									
IWRG 621 Metals : Metals M12				Result 1	Result 2	RPD			
Arsenic	S11-No12003	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Cadmium	S11-No12003	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Chromium	S11-No12003	CP	mg/kg	5.7	5.6	3	30%	Pass	
Copper	S11-No12003	CP	mg/kg	8.9	8.6	3	30%	Pass	
Lead	S11-No12003	CP	mg/kg	360	360	1	30%	Pass	
Nickel	S11-No12003	CP	mg/kg	1.4	< 1	<1	30%	Pass	
Zinc	S11-No12003	CP	mg/kg	140	140	1	30%	Pass	
Mercury	S11-No12003	CP	mg/kg	0.11	0.11	2	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Barium	S11-No12003	CP	mg/kg	96	87	10	30%	Pass	
Beryllium	S11-No12003	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Cobalt	S11-No12003	CP	mg/kg	1.8	1.8	5	30%	Pass	
Manganese	S11-No12003	CP	mg/kg	64	57	11	30%	Pass	
Vanadium	S11-No12003	CP	mg/kg	19	20	4	30%	Pass	
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
Benzene	S11-No12005	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	S11-No12005	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
o-Xylene	S11-No12005	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Toluene	S11-No12005	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total m+p-Xylenes	S11-No12005	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
TRH C6-C10	S11-No12005	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S11-No12005	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Xylenes(ortho.meta and para)	S11-No12005	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Total BTEX	S11-No12005	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Duplicate									
IWRG 621 Metals : Metals M12				Result 1	Result 2	RPD			
Arsenic	S11-No12006	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Cadmium	S11-No12006	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Chromium	S11-No12006	CP	mg/kg	3.0	3.0	1	30%	Pass	
Copper	S11-No12006	CP	mg/kg	4.6	4.3	5	30%	Pass	
Lead	S11-No12006	CP	mg/kg	7.3	6.4	13	30%	Pass	
Molybdenum	S11-No12006	CP	mg/kg	< 1	< 1	4	30%	Pass	
Nickel	S11-No12006	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Selenium	S11-No12006	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	S11-No12006	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Tin	S11-No12006	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Zinc	S11-No12006	CP	mg/kg	17	13	21	30%	Pass	
Mercury	S11-No12006	CP	mg/kg	2.2	2.5	13	30%	Pass	
Barium	S11-No12006	CP	mg/kg	19	20	3	30%	Pass	
Beryllium	S11-No12006	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Cobalt	S11-No12006	CP	mg/kg	3.6	3.7	3	30%	Pass	
Manganese	S11-No12006	CP	mg/kg	100	110	8	30%	Pass	
Vanadium	S11-No12006	CP	mg/kg	5.4	5.7	6	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Fluoride (soluble)	S11-No12012	CP	mg/kg	1.1	< 1	18	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S11-No12020	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C15-C28	S11-No12020	CP	mg/kg	120	100	18	30%	Pass	
TRH C29-C36	S11-No12020	CP	mg/kg	< 100	< 100	1.6	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
TRH >C10-C16	S11-No12020	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S11-No12020	CP	mg/kg	190	170	11	30%	Pass	
TRH >C34-C40	S11-No12020	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Speciated Phenols				Result 1	Result 2	RPD			
2,4-Dichlorophenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2,4-Dimethylphenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2,4,5-Trichlorophenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2,4,6-Trichlorophenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S11-No12020	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2-Chlorophenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Nitrophenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S11-No12020	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides (OC)				Result 1	Result 2	RPD			
4,4'-DDD	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDE	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDT	S11-No12020	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
a-BHC	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-Chlordane	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-Chlordane	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S11-No12020	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S11-No12020	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Acenaphthene	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S11-No12020	CP	mg/kg	1.7	1.0	52	30%	Fail	Q15
Benzo(a)pyrene	S11-No12020	CP	mg/kg	2.3	1.6	39	30%	Fail	Q15
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S11-No12020	CP	mg/kg	2.8	1.9	41	30%	Fail	Q15
Benzo(g,h,i)perylene	S11-No12020	CP	mg/kg	1.2	1.0	24	30%	Pass	
Chrysene	S11-No12020	CP	mg/kg	1.6	1.0	48	30%	Fail	Q15
Dibenz(a,h)anthracene	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S11-No12020	CP	mg/kg	1.3	0.9	40	30%	Fail	Q15
Fluorene	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	S11-No12020	CP	mg/kg	1.0	0.7	31	30%	Fail	Q15
Naphthalene	S11-No12020	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S11-No12020	CP	mg/kg	1.3	0.7	63	30%	Fail	Q15
Pyrene	S11-No12020	CP	mg/kg	1.8	1.2	45	30%	Fail	Q15

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Organic samples had Teflon liners	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.
N03	The method has been audited and technically assessed by NATA. NATA accreditation is pending.
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.
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Onur Mehmet Client Services

NATA Signatories:

Bob Symons	Senior Analyst-Inorganic (NSW)
James Norford	Senior Analyst-Metal (NSW)
Laura Schofield	Senior Analyst-Volatile (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)



Dr. Bob Symons

Laboratory 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

mgt-LabMark shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall mgt-LabMark be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET28136/ 31316 / 1 - 12

Your ref: 319060

NATA Accreditation No: 14484

23 November 2011

MGT Labmark Environmental Laboratories
Unit F3, 16 Mars Road
Lane Cove West NSW 2066

Attn: Ms Leanne Knowles

Dear Leanne,

Asbestos Identification

This report presents the results of twelve samples, forwarded by MGT Labmark Environmental Laboratories on 23 November 2011, for analysis for asbestos.

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

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

3. Results : **Sample No. 1. ASET28136 / 31316 / 1. BH1 0.0 - 0.2 - No11971**
Approx dimensions 5.1 cm x 5.1 cm x 1.8 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of plaster and glass.
No asbestos detected.

Sample No. 2. ASET28136 / 31316 / 2. BH7 0.0 - 0.2 - No11989
Approx dimensions 4.1 cm x 4.1 cm x 1.1 cm
The sample consisted of a mixture of soil, stones, fragments of plaster, glass, plant and insect matter,
No asbestos detected.

Sample No. 3. ASET28136 / 31316 / 3. BH9 0.0 - 0.2 - No11995
Approx dimensions 4.8 cm x 4.8 cm x 2.0 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of plaster and brick like material.
No asbestos detected.

Sample No. 4. ASET28136 / 31316 / 4. BH11 1.3 - 1.5 - No12002
Approx dimensions 4.0 cm x 4.0 cm x 1.3 cm
The sample consisted of a mixture of clayish soil, stones, fragments of plaster, brick and glass.
No asbestos detected.

Sample No. 5. ASET28136 / 31316 / 5. BH1 4.3 - 4.5 - No12003
Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm
The sample consisted of a mixture of clayish soil, stones, fragments of plaster, cement and brick.
No asbestos detected.

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635
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ASBESTOS DETECTION & IDENTIFICATION • REPAIR & CALIBRATION OF SCIENTIFIC EQUIPMENT • AIRBORNE FIBRE & SILICA MONITORING



Sample No. 6. ASET28136 / 31316 / 6. BH11 8.6 - 8.8 - No12005

Approx dimensions 5.0 cm x 5.0 cm x 1.5 cm

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

No asbestos detected.

Sample No. 7. ASET28136 / 31316 / 7. BH12 1.3 - 1.5 - No12007

Approx dimensions 4.5 cm x 4.5 cm x 1.3 cm

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

No asbestos detected.

Sample No. 8. ASET28136 / 31316 / 8. BH13 1.3 - 1.5 - No12010

Approx dimensions 4.0 cm x 4.0 cm x 1.0 cm

The sample consisted of a mixture of clayish soil, stones, fragments of plaster and brick like material.

No asbestos detected.

Sample No. 9. ASET28136 / 31316 / 9. BH13 4.3 - 4.5 - No12012

Approx dimensions 4.5 cm x 4.5 cm x 1.5 cm

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

No asbestos detected.

Sample No. 10. ASET28136 / 31316 / 10. BH13 7.3 - 7.5 - No12014

Approx dimensions 5.4 cm x 5.3 cm x 2.1 cm

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

No asbestos detected.

Sample No. 11. ASET 28136 / 31316 / 11. BH15 1.3 - 1.5 - No12018

Approx dimensions 4.0 cm x 4.0 cm x 1.5 cm

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

No asbestos detected.

Sample No. 12. ASET 28136 / 31316 / 12. BH15 4.0 - 4.2 - No012020

Approx dimensions 4.1 cm x 4.1 cm x 1.4 cm

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

No asbestos detected.

Analysed and reported by,

A handwritten signature in black ink, appearing to read "Mahen De Silva", with a stylized flourish at the end.

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



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

CERTIFICATE OF ANALYSIS

Work Order	: ES1125776	Page	: 1 of 5
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID YONGE	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: dyonge@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9756 1137	Facsimile	: +61-2-8784 8500
Project	: 18435 1017C	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 8879	Date Samples Received	: 23-NOV-2011
C-O-C number	: -----	Issue Date	: 02-DEC-2011
Sampler	: -----	No. of samples received	: 3
Site	: -----	No. of samples analysed	: 1
Quote number	: EN/025/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

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WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Edwandy Fadiar	Organic Coordinator	Sydney Organics
Evie Sidarta	Inorganic Chemist	Sydney Inorganics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Page : 2 of 5
Work Order : ES1125776
Client : SMEC TESTING SERVICES PTY LTD
Project : 18435 1017C

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Sub-Matrix: SOIL

Sub-Matrix: SOIL									
Client sample ID									
300/1/31-BH4-0.0-0.2(2)									
Client sampling date / time									
11-NOV-2011 15:00									
ES1125776-001									
Compound									
EA055: Moisture Content									
Moisture Content (dried @ 103°C)									
1.0 %									
4.6									
EG005T: Total Metals by ICP-AES									
Arsenic									
7440-38-2 5 mg/kg <5									
Cadmium									
7440-43-9 1 mg/kg <1									
Chromium									
7440-47-3 2 mg/kg 4									
Copper									
7440-50-8 5 mg/kg <5									
Lead									
7439-92-1 5 mg/kg 6									
Nickel									
7440-02-0 2 mg/kg <2									
Zinc									
7440-66-6 5 mg/kg 10									
EG035T: Total Recoverable Mercury by FIMS									
Mercury									
7439-97-6 0.1 mg/kg 1.6									
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene									
91-20-3 0.5 mg/kg <0.5									
Acenaphthylene									
208-96-8 0.5 mg/kg <0.5									
Acenaphthene									
83-32-9 0.5 mg/kg <0.5									
Fluorene									
86-73-7 0.5 mg/kg <0.5									
Phenanthrene									
85-01-8 0.5 mg/kg <0.5									
Anthracene									
120-12-7 0.5 mg/kg <0.5									
Fluoranthene									
206-44-0 0.5 mg/kg <0.5									
Pyrene									
129-00-0 0.5 mg/kg <0.5									
Benz(a)anthracene									
56-55-3 0.5 mg/kg <0.5									
Chrysene									
218-01-9 0.5 mg/kg <0.5									
Benzo(b)fluoranthene									
205-99-2 0.5 mg/kg <0.5									
Benzo(k)fluoranthene									
207-08-9 0.5 mg/kg <0.5									
Benzo(a)pyrene									
50-32-8 0.5 mg/kg <0.5									
Indeno(1,2,3-cd)pyrene									
193-39-5 0.5 mg/kg <0.5									
Dibenz(a,h)anthracene									
53-70-3 0.5 mg/kg <0.5									
Benzo(g,h,i)perylene									
191-24-2 0.5 mg/kg <0.5									
^ Sum of polycyclic aromatic hydrocarbons									
0.5 mg/kg <0.5									
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction									
10 mg/kg <10									
C10 - C14 Fraction									
50 mg/kg <50									
C15 - C28 Fraction									
100 mg/kg <100									
C29 - C36 Fraction									
100 mg/kg <100									
^ C10 - C36 Fraction (sum)									
50 mg/kg <50									



Analytical Results

Sub-Matrix: SOIL

Sub-Matrix: SOIL													
Client sample ID													
Client sampling date / time													
Compound		CAS Number		LOR		Unit		300/I/31-BH4-0.0-0.2(2)) 11-NOV-2011 15:00 ES1125776-001					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft													
C6 - C10 Fraction		10		mg/kg		<10							
^ C6 - C10 Fraction minus BTEX (F1)		10		mg/kg		<10							
>C10 - C16 Fraction		50		mg/kg		<50							
>C16 - C34 Fraction		100		mg/kg		<100							
>C34 - C40 Fraction		100		mg/kg		<100							
^ >C10 - C40 Fraction (sum)		50		mg/kg		<50							
EP080: BTEX													
Benzene		71-43-2		0.2		mg/kg		<0.2					
Toluene		108-88-3		0.5		mg/kg		<0.5					
Ethylbenzene		100-41-4		0.5		mg/kg		<0.5					
meta- & para-Xylene		108-38-3 106-42-3		0.5		mg/kg		<0.5					
ortho-Xylene		95-47-6		0.5		mg/kg		<0.5					
EP080: BTEXN													
^ Sum of BTEX		0.2		mg/kg		<0.2							
^ Total Xylenes		1330-20-7		0.5		mg/kg		<0.5					
Naphthalene		91-20-3		1		mg/kg		<1					
EP075(SIM)S: Phenolic Compound Surrogates													
Phenol-d6		13127-88-3		0.1		%		94.6					
2-Chlorophenol-D4		93951-73-6		0.1		%		92.4					
2,4,6-Tribromophenol		118-79-6		0.1		%		96.0					
EP075(SIM)T: PAH Surrogates													
2-Fluorobiphenyl		321-60-8		0.1		%		90.9					
Anthracene-d10		1719-06-8		0.1		%		89.3					
4-Terphenyl-d14		1718-51-0		0.1		%		91.3					
EP080S: TPH(V)/BTEX Surrogates													
1,2-Dichloroethane-D4		17060-07-0		0.1		%		108					
Toluene-D8		2037-26-5		0.1		%		102					
4-Bromofluorobenzene		460-00-4		0.1		%		104					



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Work Order : ES1125776
Client : SMEC TESTING SERVICES PTY LTD
Project : 18435 1017C

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	56.3	133.3
2-Chlorophenol-D4	93951-73-6	53.8	133.8
2,4,6-Tribromophenol	118-79-6	23.1	134.9
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	58.9	132.7
Anthracene-d10	1719-06-8	55.0	137.6
4-Terphenyl-d14	1718-51-0	54.0	147.8
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

QUALITY CONTROL REPORT

Work Order	: ES1125776	Page	: 1 of 8
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID YONGE	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: dyonge@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9756 1137	Facsimile	: +61-2-8784 8500
Project	: 18435 1017C	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 23-NOV-2011
C-O-C number	: ----	Issue Date	: 02-DEC-2011
Sampler	: ----	No. of samples received	: 3
Order number	: 8879	No. of samples analysed	: 1
Quote number	: EN/025/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Evie Sidarta	Inorganic Chemist	Sydney Inorganics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Page : 2 of 8
Work Order : ES1125776
Client : SMEC TESTING SERVICES PTY LTD
Project : 18435 1017C

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :

Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ES1125717-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	38.2	37.2	2.6	0% - 20%
ES1126132-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
ES1126132-011	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	15	9.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	9	10	12.3	No Limit
ES1126132-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1126132-011	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1125528-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	0.7	0.5	22.8	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.7	0.6	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				Recovery Limits (%)
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
ES1125528-001	Anonymous	EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	1.4	1.1	24.0
ES1125613-006	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	8.7	7.9	9.0
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.8	<0.8	0.0
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.8	<0.8	0.0
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	0.9	<0.8	0.0
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	2.5	2.4	5.9
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.8	<0.8	0.0
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	2.9	2.8	5.1
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	2.8	2.6	6.9
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.0	1.0	0.0
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.2	1.1	0.0
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.4	1.3	0.0
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.8	<0.8	0.0
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.8	<0.8	0.0
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.8	<0.8	0.0
ES1125613-006	Anonymous	EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.8	<0.8	0.0
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.8	<0.8	0.0
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	21.4	19.1	11.4
								0% - 20%
ES1125576-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0
		EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0
ES1125528-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0
		EP071: C15 - C28 Fraction	----	100	mg/kg	2840	2880	1.3
		EP071: C29 - C36 Fraction	----	100	mg/kg	1640	1640	0.0
		EP071: C10 - C14 Fraction	----	50	mg/kg	1930	1700	12.5
ES1125576-001	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0
		EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0
ES1125528-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0
		EP071: >C16 - C34 Fraction	----	100	mg/kg	3750	3980	6.0
		EP071: >C34 - C40 Fraction	----	100	mg/kg	890	1030	14.5
								0% - 50%



Sub-Matrix: SOIL			Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ES1125613-006	Anonymous	EP071: >C10 - C16 Fraction	----	50	mg/kg	2010	1780	12.2	0% - 20%
ES1125576-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
ES1125576-011	Anonymous	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Control Spike (LCS) Report							
Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report		Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		
				Result			LCS	Low	High		
EG005T: Total Metals by ICP-AES (QCLot: 2065546)											
EG005T: Arsenic	7440-38-2	5	mg/kg	<5		13.11 mg/kg	128	70	130		
EG005T: Cadmium	7440-43-9	1	mg/kg	<1		2.76 mg/kg	106	83.3	111		
EG005T: Chromium	7440-47-3	2	mg/kg	<2		60.93 mg/kg	112	89.2	117		
EG005T: Copper	7440-50-8	5	mg/kg	<5		54.68 mg/kg	106	90.1	114		
EG005T: Lead	7439-92-1	5	mg/kg	<5		54.76 mg/kg	110	85.2	111		
EG005T: Nickel	7440-02-0	2	mg/kg	<2		55.23 mg/kg	116	88.3	116		
EG005T: Zinc	7440-66-6	5	mg/kg	<5		103.88 mg/kg	110	88.9	112		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2065547)											
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1		1.4 mg/kg	84.4	67	118		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2059087)											
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5		4 mg/kg	107	81.9	113		
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5		4 mg/kg	101	79.6	113		
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5		4 mg/kg	103	81.5	112		
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5		4 mg/kg	97.9	79.9	112		
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5		4 mg/kg	101	79.4	114		
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5		4 mg/kg	103	81.1	112		
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5		4 mg/kg	97.7	78.8	113		
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5		4 mg/kg	97.8	78.9	113		
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5		4 mg/kg	88.2	77.2	112		
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5		4 mg/kg	92.4	79.8	114		
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5		4 mg/kg	84.4	71.8	118		
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5		4 mg/kg	90.7	74.2	117		
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5		4 mg/kg	86.0	76.4	113		
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5		4 mg/kg	84.3	71	113		
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5		4 mg/kg	82.6	71.7	113		
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5		4 mg/kg	83.2	72.4	114		
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2057100)											
EP080: C6 - C9 Fraction	-----	10	mg/kg	<10		26 mg/kg	86.2	68.4	128		
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2059088)											
EP071: C10 - C14 Fraction	-----	50	mg/kg	<50		200 mg/kg	102	59	131		
EP071: C15 - C28 Fraction	-----	100	mg/kg	<100		300 mg/kg	123	74	138		
EP071: C29 - C36 Fraction	-----	100	mg/kg	<100		200 mg/kg	99.6	63	131		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2057100)											
EP080: C6 - C10 Fraction	-----	10	mg/kg	<10		31 mg/kg	86.0	68.4	128		



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report				Laboratory Control Spike (LCS) Report				
				Result		Spike Concentration		Spike Recovery (%)		Recovery Limits (%)		
								LCS	Low	High		
Method: Compound				CAS Number	LOR	Unit						
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2059088)												
EP071: >C10 - C16 Fraction				-----	50	mg/kg	<50	250 mg/kg	104	59	131	
EP071: >C16 - C34 Fraction				-----	100	mg/kg	<100	350 mg/kg	122	74	138	
EP071: >C34 - C40 Fraction				-----	100	mg/kg	<100	-----	-----	-----	-----	
					50	mg/kg	-----	150 mg/kg	87.6	63	131	
EP080: BTEXN (QCLot: 2057100)												
EP080: Benzene				71-43-2	0.2	mg/kg	<0.2	1 mg/kg	81.6	62	120	
EP080: Toluene				108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.5	62	128	
EP080: Ethylbenzene				100-41-4	0.5	mg/kg	<0.5	1 mg/kg	82.2	58	118	
EP080: meta- & para-Xylene				108-38-3	0.5	mg/kg	<0.5	2 mg/kg	82.8	60	120	
				106-42-3								
EP080: ortho-Xylene				95-47-6	0.5	mg/kg	<0.5	1 mg/kg	85.6	60	120	
EP080: Naphthalene				91-20-3	1	mg/kg	<1	1 mg/kg	88.4	62	138	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
EG005T: Total Metals by ICP-AES (QCLot: 2065546)							
ES1126132-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	113	70	
		EG005T: Cadmium	7440-43-9	50 mg/kg	91.9	70	
		EG005T: Chromium	7440-47-3	50 mg/kg	94.2	70	
		EG005T: Copper	7440-50-8	250 mg/kg	107	70	
		EG005T: Lead	7439-92-1	250 mg/kg	89.0	70	
		EG005T: Nickel	7440-02-0	50 mg/kg	85.2	70	
		EG005T: Zinc	7440-66-6	250 mg/kg	88.3	70	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2065547)							
ES1126132-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	89.8	70	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2059087)							
ES1125528-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	80.3	70	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	83.8	70	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2057100)							
ES1125576-001	Anonymous	EP080: C6 - C9 Fraction	-----	32.5 mg/kg	92.4	70	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2059088)							
ES1125528-001	Anonymous	EP071: C10 - C14 Fraction	-----	640 mg/kg	90.1	73	
		EP071: C15 - C28 Fraction	-----	3140 mg/kg	95.8	53	
		EP071: C29 - C36 Fraction	-----	2860 mg/kg	73.5	52	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2057100)							
ES1125576-001	Anonymous	EP080: C6 - C10 Fraction	-----	37.5 mg/kg	96.4	70	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2059088)							
ES1125528-001	Anonymous	EP071: >C10 - C16 Fraction	-----	850 mg/kg	105	73	
		EP071: >C16 - C34 Fraction	-----	4800 mg/kg	90.4	53	
		EP071: >C34 - C40 Fraction	-----	2400 mg/kg	57.3	52	
EP080: BTEXN (QCLot: 2057100)							
ES1125576-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	75.5	70	
		EP080: Toluene	108-88-3	2.5 mg/kg	94.2	70	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.0	70	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	92.5	70	
		EP080: ortho-Xylene	106-42-3	2.5 mg/kg	95.7	70	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.4	70	

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1125776	Page	: 1 of 5
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID YONGE	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: dyonge@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9756 1137	Facsimile	: +61-2-8784 8500
Project	: 18435 1017C	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: [REDACTED]	Date Samples Received	: 23-NOV-2011
C-O-C number	: [REDACTED]	Issue Date	: 02-DEC-2011
Sampler	: [REDACTED]	No. of samples received	: 3
Order number	: 8879	No. of samples analysed	: 1
Quote number	: EN/025/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation		Evaluation	Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction		Date analysed	Due for analysis
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011			24-NOV-2011	25-NOV-2011	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011	29-NOV-2011	09-MAY-2012	✓	30-NOV-2011	09-MAY-2012
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011	29-NOV-2011	09-DEC-2011	✓	30-NOV-2011	09-DEC-2011
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011	24-NOV-2011	25-NOV-2011	✓	25-NOV-2011	03-JAN-2012
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011	24-NOV-2011	25-NOV-2011	✓	25-NOV-2011	03-JAN-2012
EP080: BTEX							
Soil Glass Jar - Unpreserved (EP080) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011	23-NOV-2011	25-NOV-2011	✓	25-NOV-2011	25-NOV-2011
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011	23-NOV-2011	25-NOV-2011	✓	25-NOV-2011	25-NOV-2011
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft							
Soil Glass Jar - Unpreserved (EP080) 300/1/31-BH4-0.0-0.2(2)		11-NOV-2011	23-NOV-2011	25-NOV-2011	✓	25-NOV-2011	25-NOV-2011



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **x** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods				Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	4	25.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EP075(SIM)	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EG035T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EG005T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EP071	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EG005T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EG005T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	ALS QCS3 requirement
	EG035T	1	20	5.0	5.0	✓	ALS QCS3 requirement
	EG005T	1	20	5.0	5.0	✓	ALS QCS3 requirement
	EP071	1	19	5.3	5.0	✓	ALS QCS3 requirement
	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods		Method	Matrix	Method Descriptions
Moisture Content		EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES		EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS		EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
TPH - Semivolatle Fraction		EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)		EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX		EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Preparation Methods		Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges		EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap		* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)		ORG17B	SOIL	In-house, Mechanical agitation (tumbler), 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QW/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

Sample Receipt Advice

Company name: **SMEC Testing Services Pty Ltd**

Contact name: David Yonge
Client job number: 18435/1017C
COC number: P18435
Turn around time: 5 Day
Date/Time received: Nov 18, 2011 5:00 PM
MGT lab reference: **319060**

Sample information

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

Notes

Sample BH4 0.0 -0.2 was not received
Samples received by the laboratory after 4pm are deemed to have been received the following working day..

Contact notes

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

Bob Symons on Phone : +61 2 8215 6222 or by e.mail: enviro.sydney@mgtlabmark.com.au

Results will be delivered electronically via e.mail to David Yonge - dyonge@smectesting.com.au.

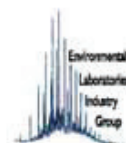
mgt Labmark Sample Receipt



Environmental Laboratory
Air Analysis
Water Analysis
Soil Contamination Analysis

NATA Accreditation
Stack Emission Sampling & Analysis
Trade Waste Sampling & Analysis
Groundwater Sampling & Analysis

35Years of Environmental Analysis & Experience – fully Australian Owned



CHAIN OF CUSTODY RECORD

SMEC Testing Services

PO Box 6989 (postal)
14/1 Cowpasture Place (office), Wetherill Park NSW 2164

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E-Mail: dyonged@smectesting.com.au Contact: David Yonge

Laboratory: MGT Labmark
Unit F3-6, Building F, 16 Mars Road, LANE COVE NSW 2066

Telephone: (02) 8215 6222 Fax: (02) 9420 2977

Job No: 18435/1017C Order No: 8877

Contact: -

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	ANALYSIS
	300/1/31 -BH1 - 0.0-0.2	1		10/11/2011		soil	No 11911	M13 X C4 X C15 X VOC R6 Asbestos X
	300/1/31 -BH1 - 0.6-0.7	1		10/11/2011		soil	72	
	300/1/31 -BH2 - 0.0-0.2	1		10/11/2011		soil	73	
	300/1/31 -BH2 - 0.5-0.7	1		10/11/2011		soil	74	
	300/1/31 -BH3 - 0.0-0.2	1		11/11/2011		soil	75	
	300/1/31 -BH3 - 0.5-0.7	1		11/11/2011		soil	76	
	300/1/31 -BH4 - 0.0-0.2	1		11/11/2011		soil	77	
	300/1/31 -BH4 - 0.0-0.2 (1)	1		11/11/2011		soil	78	
	300/1/31 -BH4 - 0.0-0.2 (3)	1		11/11/2011		soil	79	
	300/1/31 -BH4 - 0.5-0.7	1		11/11/2011		soil	80	
	300/1/31 -BH4 - 1.1-1.3	1		11/11/2011		soil	81	
	300/1/31 -BH5 - 0.0-0.2	1		11/11/2011		soil	82	
	300/1/31 -BH5 - 1.3-1.5	1		11/11/2011		soil	83	
	300/1/31 -BH5 - 2.7-2.9 (1)	1		11/11/2011		soil	84	
	300/1/31 -BH5 - 2.7-2.9 (2)	1		11/11/2011		soil	85	
	300/1/31 -BH5 - 3.7-3.9	1		11/11/2011		soil	86	
	300/1/31 -BH6 - 0.0-0.2	1		11/11/2011		soil	87	
	300/1/31 -BH6 - 0.5-0.7	1		11/11/2011		soil	88	
	300/1/31 -BH7 - 0.0-0.2	1		11/11/2011		soil	89	
	300/1/31 -BH7 - 1.3-1.5	1		11/11/2011		soil	90	
	300/1/31 -BH7 - 2.7-2.9	1		11/11/2011		soil	91	

recd 5pm 18/7/11 Jmud
#319060

CHAIN OF CUSTODY RECORD

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SMEC Testing Services Pty Ltd Job No: 18435/1017C Order No: 8877

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E-Mail: dyongee@smectesting.com.au Contact: David Yonge

Laboratory: MGT Labmark

Unit F3-6, Building F, 16 Mars Road, LANE COVE NSW 2066

Telephone: (02) 8215 6222 Fax: (02) 9420 2977 Contact: -

Laboratory number	Sample number	jar/bottle	bag	Date sampled	Composite number	Sample type	Comments	M13	C4	C15	VOC	R6	Asbestos	ANALYSIS									
	300/1/31 -BH8 - 0.0-0.2	1		11/11/2011		soil	No11992	X	X														
	300/1/31 -BH8 - 1.3-1.5	1		11/11/2011		soil	93	X	X														
	300/1/31 -BH8 - 2.7-2.9	1		11/11/2011		soil	94																
	300/1/31 -BH9 - 0.0-0.2	1		11/11/2011		soil	95	X					X										
	300/1/31 -BH9 - 0.5-0.7	1		11/11/2011		soil	96																
	300/1/31 -BH10 - 0.0-0.2 (1)	1		10/11/2011		soil	97	X	X														
	300/1/31 -BH10 - 0.0-0.2 (3)	1		10/11/2011		soil	98																
	300/1/31 -BH10 - 1.0-1.3	1		10/11/2011		soil	99	X	X														
	300/1/31 -BH10 - 2.7-2.9	1		10/11/2011		soil	No12000																
	300/1/31 -BH11 - 0.0-0.2	1		10/11/2011		soil	01																
	300/1/31 -BH11 - 1.3-1.5	1		10/11/2011		soil	02					X	X										
	300/1/31 -BH11 - 4.3-4.5	1		10/11/2011		soil	03	X	X			X	X										
	300/1/31 -BH11 - 5.7-5.9	1		10/11/2011		soil	04																
	300/1/31 -BH11 - 8.6-8.8	1		10/11/2011		soil	05	X	X	X			X										
	300/1/31 -BH12 - 0.1-0.3	1		10/11/2011		soil	06	X															
	300/1/31 -BH12 - 1.3-1.5	1		10/11/2011		soil	07				X	X	X										
	300/1/31 -BH12 - 4.3-4.5	1		10/11/2011		soil	08	X	X														
	300/1/31 -BH13 - 0.0-0.2	1		10/11/2011		soil	09																
	300/1/31 -BH13 - 1.3-1.5	1		10/11/2011		soil	10				X	X	X										
	300/1/31 -BH13 - 2.7-2.9	1		10/11/2011		soil	11																
	300/1/31 -BH13 - 4.3-4.5	1		10/11/2011		soil	12				X	X	X										

Spm 18/11/11 dmd
#319060

CHAIN OF CUSTODY RECORD



SMEC Testing Services Pty Ltd Job No: 18435/1017C Order No: 8877

PO Box 6989 (postal)

14/1 Cowpasture Place (office), Wetherill Park NSW 2164

Telephone: (02) 9756 2166 Fax: (02) 9756 1137

E-Mail: dyonge@smectesting.com.au Contact: David Yonge

Laboratory: MGT Labmark

Unit F3-6, Building F, 16 Mars Road, LANE COVE NSW 2066

Telephone: (02) 8215 6222 Fax: (02) 9420 2977

Contact: -

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	M13	C4	C15	VOC	R6	Asbestos																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Released by SMEC Testing Services
David Yonge

Signed: *Dyx*

Received by: _____

Signed: _____

Comments: _____

Date: 18/11/2011 Time: 2:00 PM

Date: _____ Time: _____

CoC Number: P18435 - COC1

Your quotation: _____

Preliminary results by: _____ Final results by: _____

Fri 25 November 2011 Fri 25 November 2011

Standard Detection Limits Apply

Spm 18/11/11 UK.
319060.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : ES1125776

Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID YONGE	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: dyonge@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9756 1137	Facsimile	: +61-2-8784 8500
Project	: 18435 1017C	Page	: 1 of 2
Order number	: 8879	Quote number	: ES2010SMETES0264 (EN/025/10)
C-O-C number	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
Sampler	: ----		

Dates

Date Samples Received	: 23-NOV-2011	Issue Date	: 24-NOV-2011 00:08
Client Requested Due Date	: 30-NOV-2011	Scheduled Reporting Date	: 30-NOV-2011

Delivery Details

Mode of Delivery	: Client Drop off	Temperature	: 8.8°C
No. of coolers/boxes	: 1 BAG	No. of samples received	: 3
Security Seal	: Intact.	No. of samples analysed	: 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Insufficient time received for analysis of some analytes within 'analytical holding times'. Samples should be submitted with at least half the holding time remaining to minimize the possibility of holding time breaches.
- **Samples received in appropriately pretreated and preserved containers.**
- **Samples BH10 and BH13 have been placed on hold**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES1125776-001 : 11-NOV-2011 15:00 : 300/1/31-BH4-0.0-0.2(2)
ES1125776-002 : 10-NOV-2011 15:00 : 300/1/31-BH10-0.0-0.2(2)
ES1125776-003 : 10-NOV-2011 15:00 : 300/1/31-BH13-7.3-7.5(2)

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 TPH/BTEX/PAH (SIM)
ES1125776-001	11-NOV-2011 15:00	300/1/31-BH4-0.0-0.2...		✓	✓
ES1125776-002	10-NOV-2011 15:00	300/1/31-BH10-0.0-0....	✓		
ES1125776-003	10-NOV-2011 15:00	300/1/31-BH13-7.3-7....	✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS

- A4 - AU Tax Invoice (INV)

Email accounts@smectesting.com.au

MR DAVID YONGE

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)

Email dyonge@smectesting.com.au
Email dyonge@smectesting.com.au
Email dyonge@smectesting.com.au
Email dyonge@smectesting.com.au
Email dyonge@smectesting.com.au
Email dyonge@smectesting.com.au
Email dyonge@smectesting.com.au

REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)

Email enquiries@smectesting.com.au
Email enquiries@smectesting.com.au
Email enquiries@smectesting.com.au
Email enquiries@smectesting.com.au
Email enquiries@smectesting.com.au
Email enquiries@smectesting.com.au

CHAIN OF CUSTODY RECORD

SMEC Testing Services Pty Ltd

Job No.:

Job No: 18435/1017C

Order No: 8879

PO Box 6989 (postal)

14/1 Cowpasture Place (office). Wetherill Park NSW 2164

14/1 Cowpasture Place (office). Wetherill Park NSW 2164

Telephone: (02) 9756 2166 Fax: (02) 9756 1137

Telephone: (02) 9756 2166 Fax: (02) 9756 1137

E-Mail: dyongce@smectesting.com.au
Contact: David Yongce

E-Mail: dyongce@smectesting.com.au
Contact: David Yongce

Laboratory: ALS Laboratory Group - Sydney Environmental Division

277-289 Woodpark Road, SMITHFIELD NSW 2164

Telephone: (02) 8784 8555 Fax: /

Contact: Jacob Wenzel

Contact: Jacob Weisbach



Environmental Division
Sydney

Work Order

ES1125776



Telephone: +61-2-8784 8555

Laboratory number	Sample number	jar/bottle	bag	Date sampled	Composite number	Sample type	Comments	S2	S7
1	300/1/31 -BH4 - 0.0-0.2 (2)	1		11/11/2011		soil		X	
2	300/1/31 -BH10 - 0.0-0.2 (2)	1		10/11/2011		soil			
3	300/1/31 -BH13 - 7.3-7.5 (2)	1		10/11/2011		soil			
TOTAL		3							

Released by SMEC Testing Services

David Yonge

Signed:

Received by:

Product:

Comments:

Date:

23/11/2011

Time:

2:20 PM

Date:

Time:

4

Frank

1000

1000

Standard Detection Limits Apply

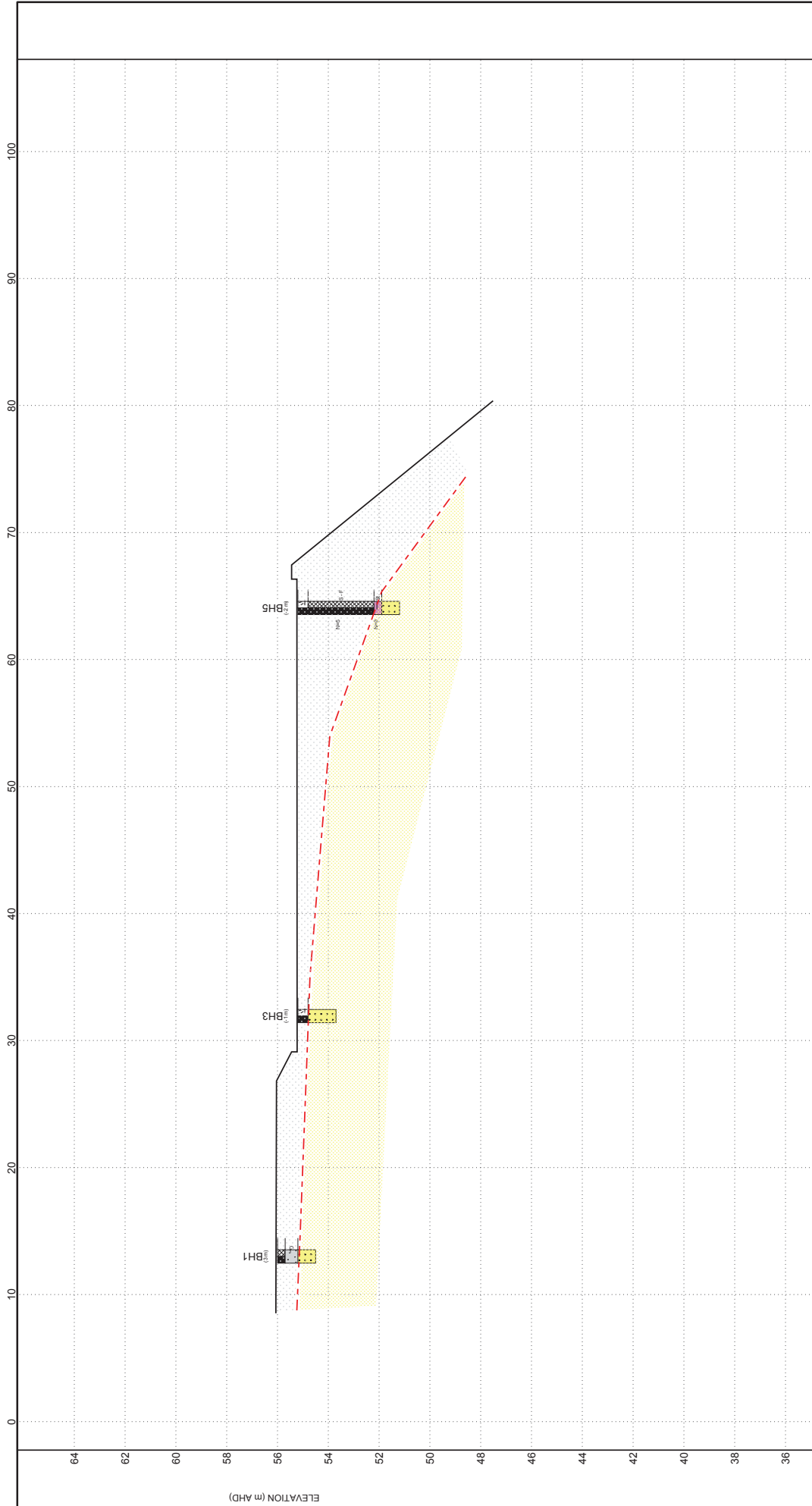
CoC Number: P18435 - SCOC1

<p>Your quotation:</p>	<p>SMEC 2010 (EN/025/10)</p>
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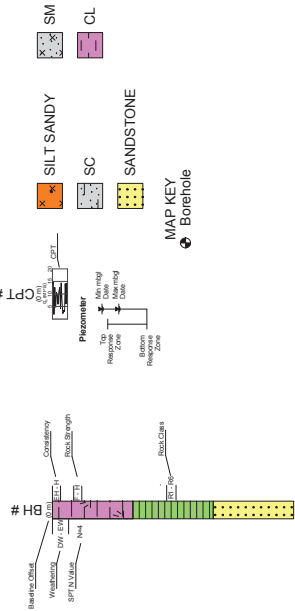
Preliminary results by:	Final results by:
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Wed 30 November 2011

APPENDIX D – LONG SECTIONS AND CROSS SECTIONS

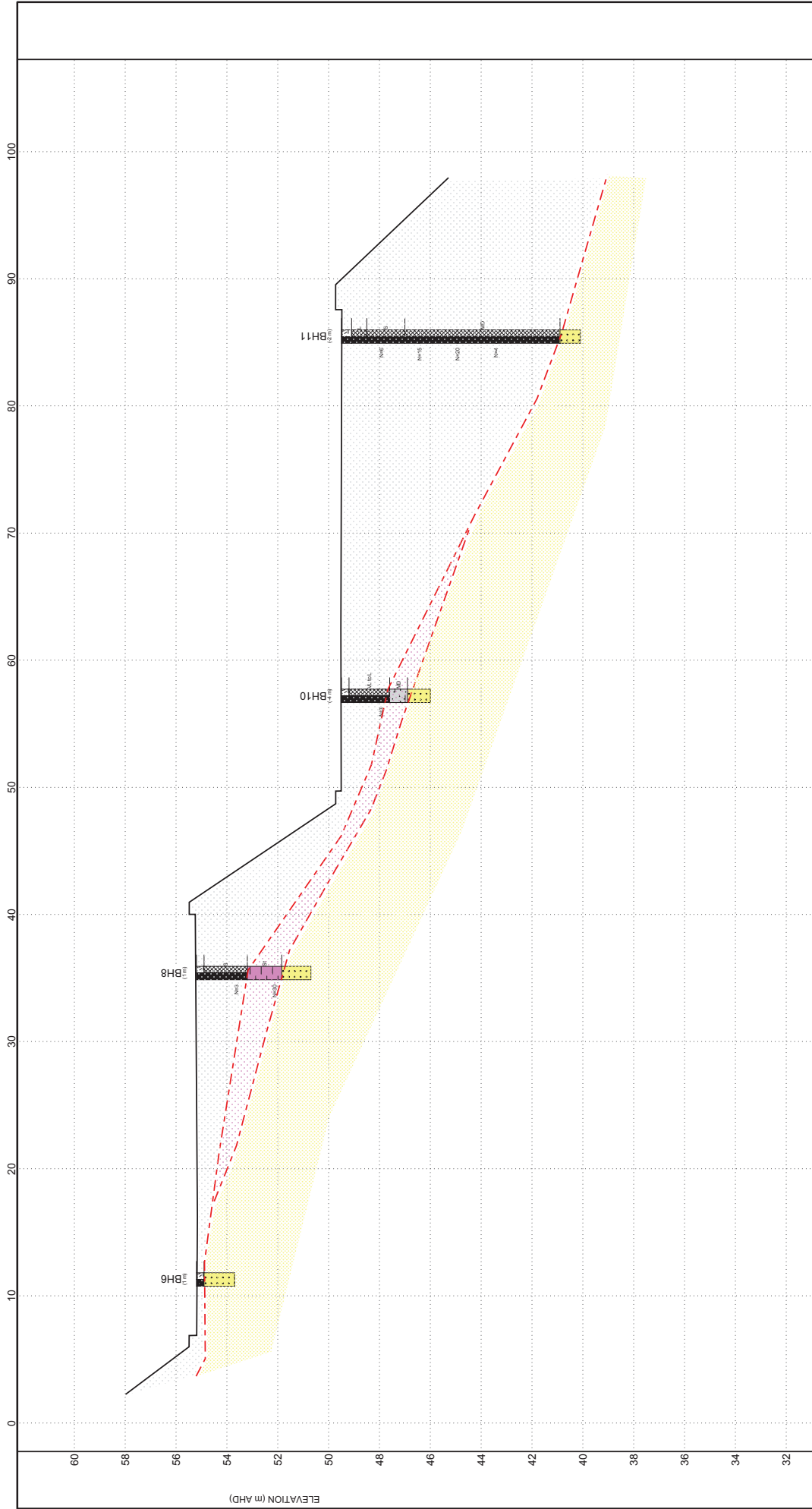


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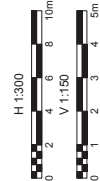
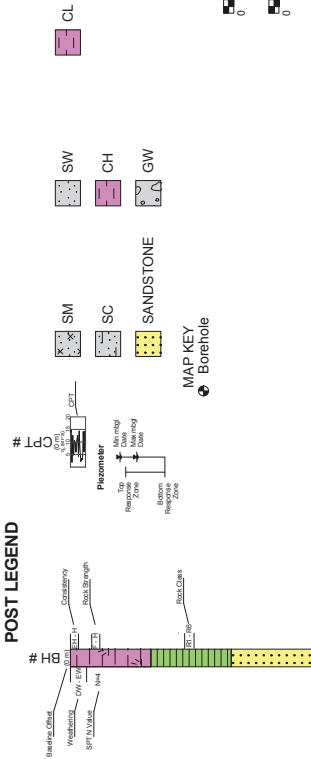



TITLE
LANE COVE COUNCIL
266 LONGUEVILLE ROAD, LANE COVE
266 LONGUEVILLE ROAD, LANE COVE GI
LONGSECTION A-A'

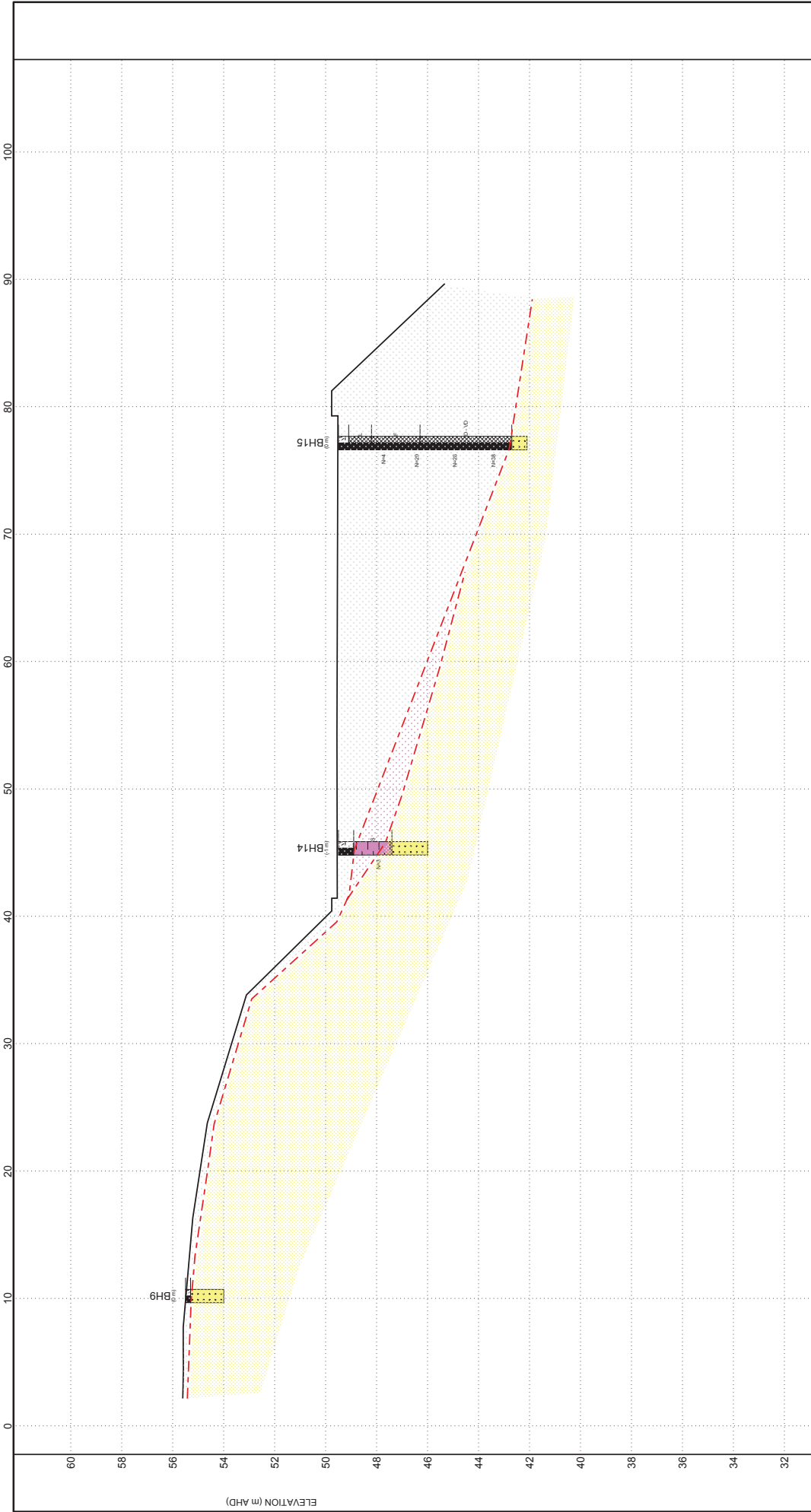
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CHECKED	M.G	DATE	29/11/2011
SCALE	H 1:300 V 1:150	FIGURE No	A3
PROJECT No	30011131	FIGURE No	C-C'



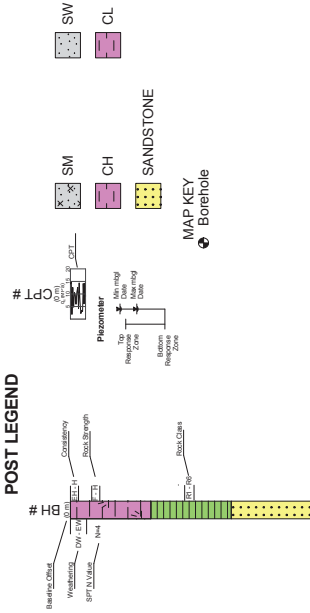
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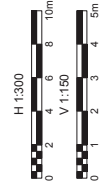
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	266 LONGUEVILLE ROAD, LANE COVE		CHECKED		DATE	
	266 LONGUEVILLE ROAD, LANE COVE GI		M.G		29/11/2011	
			SCALE		H 1:300 V 1:150	
LONGSECTION B-B'		PROJECT No		FIGURE No		
		30011131		A3		
				B-B'		



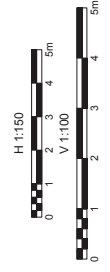
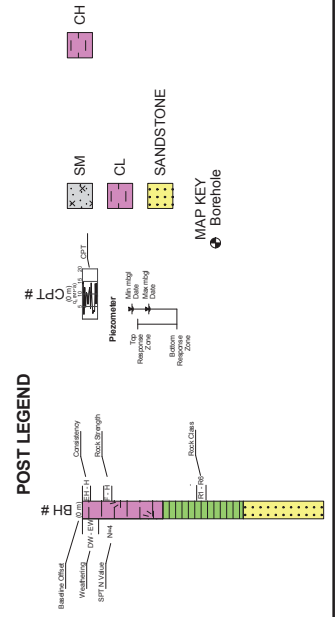
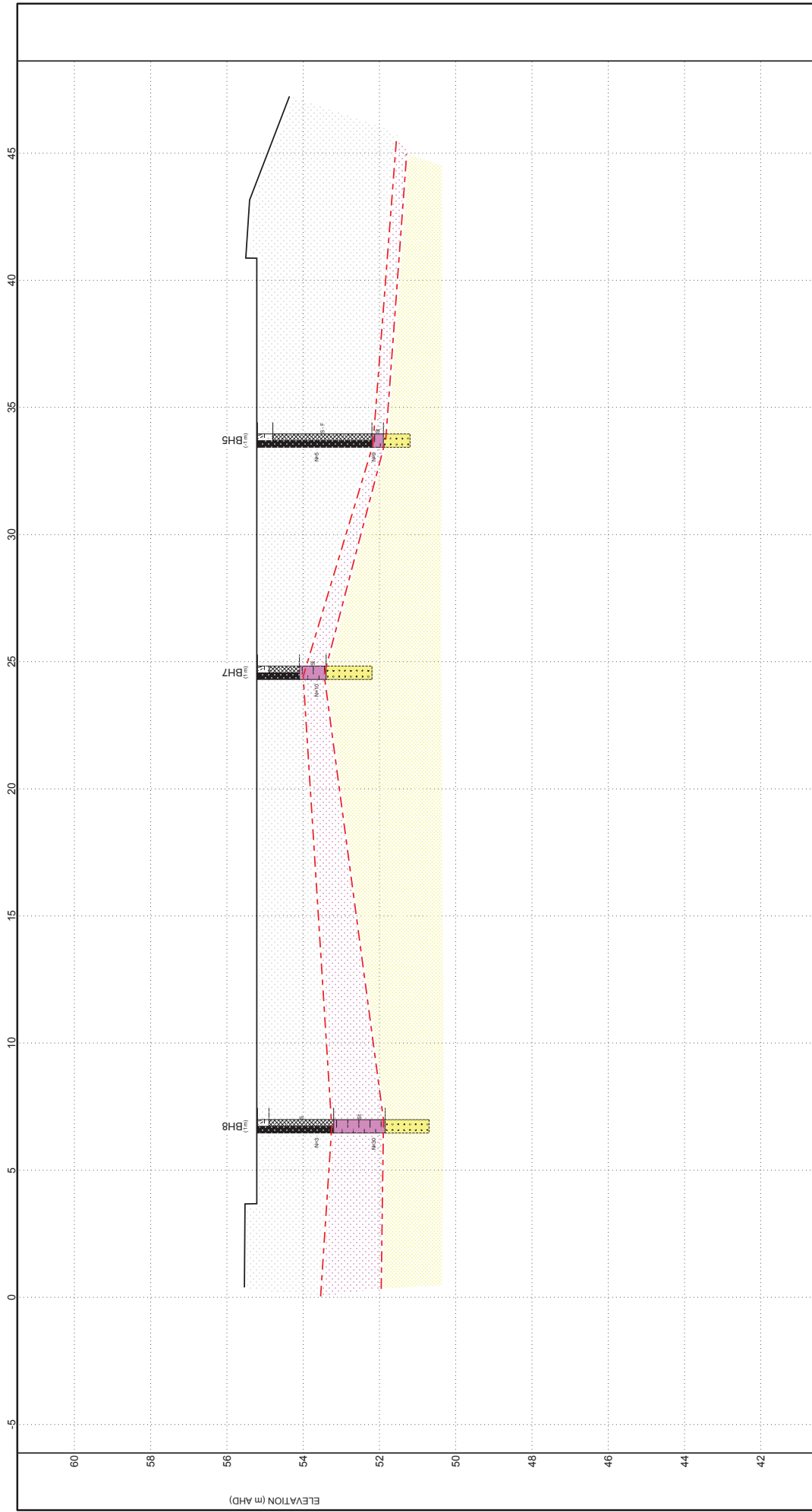
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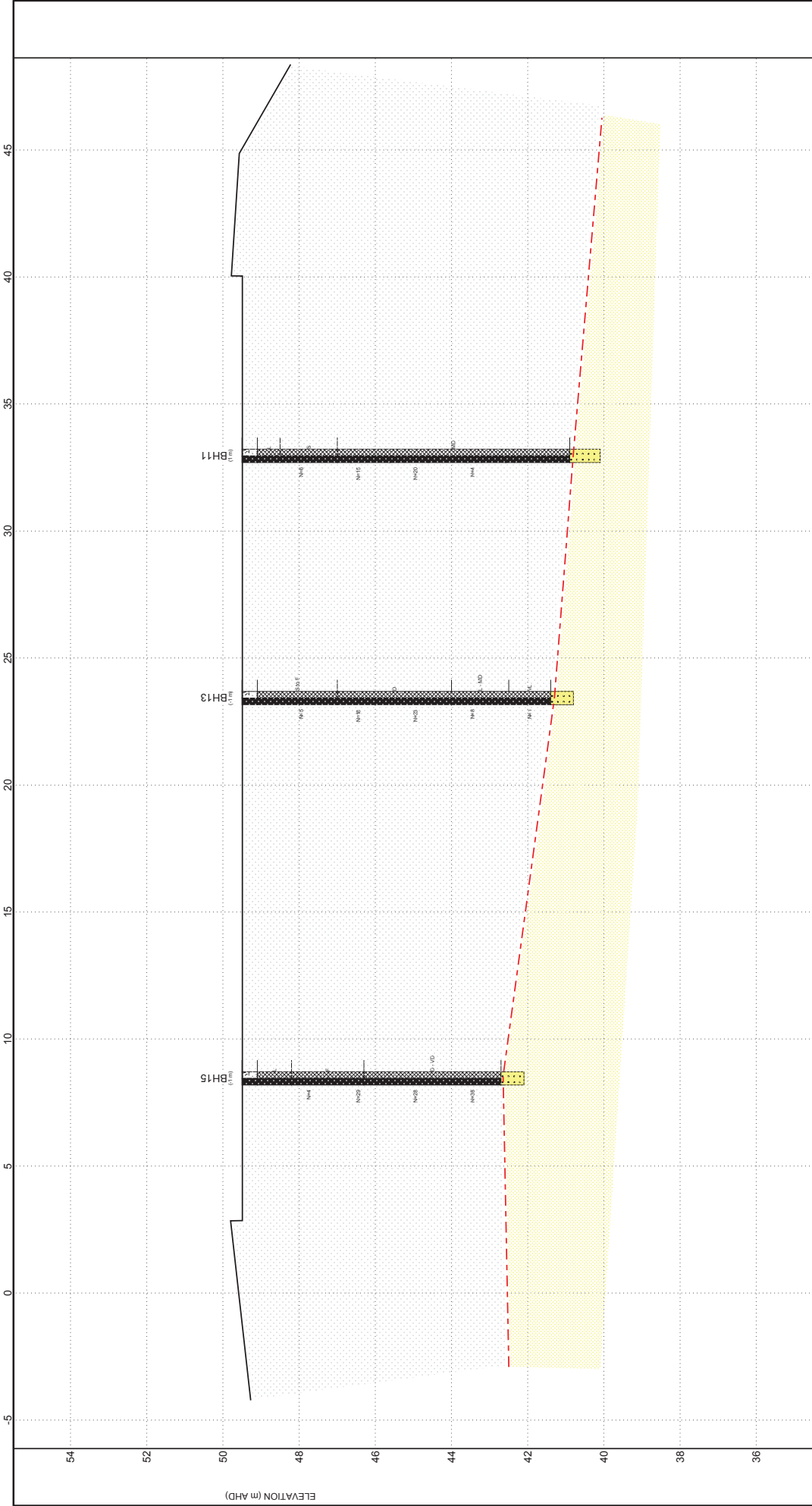
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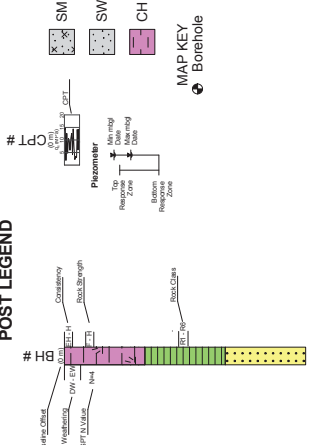
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	266 LONGUEVILLE ROAD, LANE COVE		CHECKED		DATE	
	266 LONGUEVILLE ROAD, LANE COVE GI		M.G		29/11/2011	
			SCALE		H 1:300 V 1:150	
LONGSECTION C-C'		PROJECT No		FIGURE No		
		30011131		A3		
				C-C'		



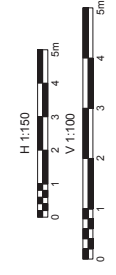
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	LANE COVE COUNCIL						
	266 LONGUEVILLE ROAD, LANE COVE						
	266 LONGUEVILLE ROAD, LANE COVE GI						
DRAWN		A.G		DATE		29/11/2011	
CHECKED		M.G		DATE		29/11/2011	
SCALE		H 1:150 V 1:100					A3
PROJECT NO		30011131		FIGURE NO		C-C'	



POST LEGEND



GW SANDSTONE CL



	TITLE	LANE COVE COUNCIL		DRAWN	A.G	DATE	29/11/2011
		266 LONGUEVILLE ROAD, LANE COVE		CHECKED	M.G	DATE	29/11/2011
		266 LONGUEVILLE ROAD, LANE COVE GI		SCALE	H 1:150 V 1:100		A3
		CROSS SECTION E-E'		PROJECT No	30011131	FIGURE No	C-C'

APPENDIX E – AERIAL PHOTOS



Approximate Scale: 1: 3 900

Source: Department of Lands

2005 Aerial Photograph Showing the Site and its Surrounds



Approximate Scale: 1: 3 250

Source: Department of Lands

200 □ Aerial Photograph Showing the Site and its Surrounds



Approximate Scale: 1: □900

Source: Department of Lands

2002 Aerial Photograph Showing the Site and its Surrounds



Approximate Scale: 1: 3 900

Source: Department of Lands



Approximate Scale: 1: 3 000

Source: Department of Lands



Approximate Scale: 1: 3 000

Source: Department of Lands



Approximate Scale: 1: 2 □50

Source: Department of Lands



Approximate Scale: 1: 3 100

Source: Department of Lands

1951 Aerial Photograph Showing the Site and its Surrounds



Approximate Scale: 1: 0000

Source: Department of Lands

1930 Aerial Photograph Showing the Site and its Surrounds

APPENDIX F – CERTIFICATES



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

PLANNING CERTIFICATE

Under Section 149 Environmental Planning and Assessment Act, 1979

Applicant:

SMEC Testing Services Pty Ltd

PO Box 6989

Wetherill Park

NSW 2164

Date of Issue:

02/12/2011

Council Reference:

49958

Applicant Reference:

0002778544

Certificate No:

1359

Owner(s):

Lane Cove Council

Property address: 266 Longueville Road LANE COVE NSW 2066

Description: PT: 322 DP: 1102537 LOC: Part

Property Reference: 18544

INFORMATION PROVIDED PURSUANT TO SECTION 149(2) OF THE ACT

The planning information contained in this certificate applies specifically to the land.

Table of contents

Description	Section No.
PART 2: Information for Section 149 (2)	
Names of relevant planning instruments and DCP	1
Zoning, Heritage, Conservation	2
Zoning & land use under SEPP (Sydney Region Growth Centres) 2006	2A
Complying Development	3
Coastal protection	4
Certain information relating to beaches and coasts	4A
Annual charges: Local Government Act – coastal protection	4B
Mine Subsidence	5
Road Widening and road realignment	6
Council and other public hazard risk restriction	7
Flood related development controls	7A
Land reserved for acquisition	8
Contributions plans	9
Biodiversity certified land	9A
Biobanking agreements	10
Bushfire prone land	11
Property Vegetation Plans	12
Orders under Trees (disputes between neighbours) act	13
Directions under part 3A	14
Site compatibility certificates and conditions for seniors housing	15
Site compatibility certificates for infrastructure	16
Site compatibility certificates and conditions for affordable affordable rental housing	17
Contaminated Land Management Act 1997s.59(2)	Note

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

Table of contents

PART 5: Additional information for Section 149 (5)

Part 5

PART 2:

Sec: 1 **Names of relevant planning instruments and DCP**

- (1) The name of each environmental planning instrument that applies to the carrying out of development on the land.
 - Lane Cove Local Environment Plan 2009 - gazetted on 19 February 2010
 - Lane Cove Local Environment Plan 2009 - gazetted on 19 February 2010
 - State Environmental Planning Policy No.4: Development Without Consent and Miscellaneous Complying Development (Amendment No. 15 - gazetted 4 December 1981 - 3 March 2006
 - State Environmental Planning Policy No.6: Number of storeys in a building - gazetted 10 December 1982
 - State Environmental Planning Policy No.19: Bushland in Urban Areas - gazetted 24 October 1986
 - State Environmental Planning Policy No.32: Urban Consolidation (Redevelopment of Urban Land) - gazetted 15 November 1991
 - State Environmental Planning Policy No.55: Remediation of Land - gazetted 28 August 1998
 - State Environmental Planning Policy No.64: Advertising and Signage - gazetted 16 March 2001
 - State Environmental Planning Policy (BASIX) 2004 - gazetted 25 June 2004
 - State Environmental Planning Policy (Housing for seniors or people with a disability) 2004 Amendment No.2 - gazetted 31 March 2004 effective 12 October 2007
 - State Environmental Planning Policy (Temporary Structures and Places of Public Entertainment) - gazetted 28 September 2007
 - State Environmental Planning Policy (Infrastructure) 2007 - Gazetted 21 December 2007; commenced 1 January 2008
 - State Environmental Planning Policy (Exempt & Complying Development Codes) - gazetted 12 December 2008
 - State Environmental Planning Policy (Major Projects) 2005 - gazetted 1 August 2005
- (2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved)
- (3) The name of each development control plan that applies to the carrying out of development on the land.
 - Lane Cove Development Control Plan, effective 22 February 2010

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

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

Sec: 2 Zoning and land use under relevant LEPs

The land is zoned: Environmental Conservation E2

1 Objectives of zone

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.

2 Permitted without consent

Environmental protection works

3 Permitted with consent

Environmental facilities; Roads

4 Prohibited

Business premises; Hotel or motel accommodation; Industries; Multi dwelling housing; Recreation facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3

The land is zoned: Public Recreation RE1

1 Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.
- To make provision for rights of public access to more foreshore land and to link existing open space areas.

2 Permitted without consent

Environmental protection works

3 Permitted with consent

Child care centres; Community facilities; Environmental facilities; Kiosks; Marinas; Mooring pens; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Signage; Take away



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

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food and drink premises

4 Prohibited

Any development not specified in item 2 or 3



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

- (5) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:
Not Applicable
- (6) Whether the land includes or comprises critical habitat:
NO
- (7) Whether the land is in a conservation area (however described)::
NO
- (8) Whether an item of environmental heritage (however described) is situated on the land::
NO

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

Not applicable.

Sec: 3 Complying development

(1) Whether or not the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (c) and (d) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

(2) If complying development may not be carried out on that land because of the provisions of clauses 1.17A (c) and (d) and 1.19 of that Policy, the reasons why it may not be carried out under that clause

Sec: 4 Coastal Protection

Whether or not the land is affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that the council has been so notified by the Department of Services, Technology and Administration.

NO

Sec: 4A Certain information relating to beaches and coasts

Not applicable.

Sec: 4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable.

Sec: 5 Mine subsidence

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

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

NO

Sec: 6 Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*:

Not affected by road widening

- (b) any environmental planning instrument:

NO

- (c) any resolution of the council:

NO

Sec: 7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
(b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council,

that restricts the development of the land because of the likelihood of:-

Land slip:

NO

Bushfire:

See Section 11.

Tidal inundation:

NO

Subsidence:

NO

Acid Sulfate soils:

NO

Sec: 7A Flood related development controls information

- (1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.
The Lane Cove Development Control Plan - effective 22 February 2010 - applies



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

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

Overland Flow

A study is currently being undertaken to determine exact locations subject to overland flow in the Municipality of Lane Cove. Until such time as Council has completed this work, property owners should conduct their own investigations to be satisfied that this property is not affected by overland flow.

Words and expressions in this clause have the same meanings as in the instrument set out in the *Schedule to the Standard Instrument (Local Environmental Plans) Order 2006*.

Sec: 8 Land reserved for acquisition

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

NO

Sec: 9 Contributions plans

Lane Cove Section 94 Contributions Plan.

Sec: 9A Biodiversity certified land

Not applicable.

Sec: 10 Biobanking agreements

Not applicable.

Sec: 11 Bush fire prone land

All or some of the land is bush fire prone land as identified in the Lane Cove Bushfire Prone Land Map dated 21st October 2004.

Sec: 12 Property vegetation plans

Not applicable.

Sec: 13 Orders under Trees (Disputes Between Neighbours) Act 2006

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

NONE

Sec: 14 Directions under Part 3A



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48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

NONE

Sec: 15 Site compatibility certificates and conditions for seniors housing

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

NO

Sec: 16 Site compatibility certificates for infrastructure

Whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land.

NO

Sec: 17 Site compatibility certificates and conditions for affordable rental housing

Whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land:

NO

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

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

NO

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

NO

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

NO

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

NO

(e) that the land to which the certificate relates is the subject of a site audit statement within the

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48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

meaning of that Act - if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

NO

Council records do not have sufficient information about the uses (including previous uses) of the land which is the subject of this Section 149 certificate. To confirm that the land hasn't been used for a purpose which would be likely to have contaminated the land, parties should make their own enquiries as to whether the land may be contaminated.

For further information, please contact the Strategic Planning Department on 9911 3612.



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

PLANNING CERTIFICATE

Under Section 149 Environmental Planning and Assessment Act, 1979

Applicant:

SMEC Testing Services Pty Ltd
PO Box 6989
Wetherill Park
NSW 2164

Date of Issue: 02/12/2011

Council Reference: 49967

Applicant Reference: 0002778544

Certificate No: 1361

Owner(s): Lane Cove Council
Property address: 266A Longueville Road LANE COVE NSW 2066
Description: LOT: 1 DP: 91655
Property Reference: 13325

INFORMATION PROVIDED PURSUANT TO SECTION 149(2) OF THE ACT

The planning information contained in this certificate applies specifically to the land.

Table of contents

Description	Section No.
PART 2: Information for Section 149 (2)	
Names of relevant planning instruments and DCP	1
Zoning, Heritage, Conservation	2
Zoning & land use under SEPP (Sydney Region Growth Centres) 2006	2A
Complying Development	3
Coastal protection	4
Certain information relating to beaches and coasts	4A
Annual charges: Local Government Act – coastal protection	4B
Mine Subsidence	5
Road Widening and road realignment	6
Council and other public hazard risk restriction	7
Flood related development controls	7A
Land reserved for acquisition	8
Contributions plans	9
Biodiversity certified land	9A
Biobanking agreements	10
Bushfire prone land	11
Property Vegetation Plans	12
Orders under Trees (disputes between neighbours) act	13
Directions under part 3A	14
Site compatibility certificates and conditions for seniors housing	15
Site compatibility certificates for infrastructure	16
Site compatibility certificates and conditions for affordable affordable rental housing	17
Contaminated Land Management Act 1997s.59(2)	Note

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

Table of contents

PART 5: Additional information for Section 149 (5)

Part 5

PART 2:

Sec: 1 **Names of relevant planning instruments and DCP**

- (1) The name of each environmental planning instrument that applies to the carrying out of development on the land.
- Lane Cove Local Environment Plan 2009 - gazetted on 19 February 2010
 - Lane Cove Local Environment Plan 2009 - gazetted on 19 February 2010
 - State Environmental Planning Policy No.4: Development Without Consent and Miscellaneous Complying Development (Amendment No. 15 - gazetted 4 December 1981 - 3 March 2006
 - State Environmental Planning Policy No.6: Number of storeys in a building - gazetted 10 December 1982
 - State Environmental Planning Policy No.19: Bushland in Urban Areas - gazetted 24 October 1986
 - State Environmental Planning Policy No.32: Urban Consolidation (Redevelopment of Urban Land) - gazetted 15 November 1991
 - State Environmental Planning Policy No.55: Remediation of Land - gazetted 28 August 1998
 - State Environmental Planning Policy No.64: Advertising and Signage - gazetted 16 March 2001
 - State Environmental Planning Policy (BASIX) 2004 - gazetted 25 June 2004
 - State Environmental Planning Policy (Housing for seniors or people with a disability) 2004 Amendment No.2 - gazetted 31 March 2004 effective 12 October 2007
 - State Environmental Planning Policy (Temporary Structures and Places of Public Entertainment) - gazetted 28 September 2007
 - State Environmental Planning Policy (Infrastructure) 2007 - Gazetted 21 December 2007; commenced 1 January 2008
 - State Environmental Planning Policy (Exempt & Complying Development Codes) - gazetted 12 December 2008
 - State Environmental Planning Policy (Major Projects) 2005 - gazetted 1 August 2005
- (2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved)
- (3) The name of each development control plan that applies to the carrying out of development on the land.
- Lane Cove Development Control Plan, effective 22 February 2010

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

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

Sec: 2 Zoning and land use under relevant LEPs

The land is zoned: Environmental Conservation E2

1 Objectives of zone

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.

2 Permitted without consent

Environmental protection works

3 Permitted with consent

Environmental facilities; Roads

4 Prohibited

Business premises; Hotel or motel accommodation; Industries; Multi dwelling housing; Recreation facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3

The land is zoned: Public Recreation RE1

1 Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.
- To make provision for rights of public access to more foreshore land and to link existing open space areas.

2 Permitted without consent

Environmental protection works

3 Permitted with consent

Child care centres; Community facilities; Environmental facilities; Kiosks; Marinas; Mooring pens; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Signage; Take away

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

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food and drink premises

4 Prohibited

Any development not specified in item 2 or 3



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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

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- (5) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:
Not Applicable
- (6) Whether the land includes or comprises critical habitat:
NO
- (7) Whether the land is in a conservation area (however described)::
NO
- (8) Whether an item of environmental heritage (however described) is situated on the land::
NO

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

Not applicable.

Sec: 3 Complying development

- (1) Whether or not the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (c) and (d) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.
- (2) If complying development may not be carried out on that land because of the provisions of clauses 1.17A (c) and (d) and 1.19 of that Policy, the reasons why it may not be carried out under that clause

Sec: 4 Coastal Protection

Whether or not the land is affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that the council has been so notified by the Department of Services, Technology and Administration.

NO

Sec: 4A Certain information relating to beaches and coasts

Not applicable.

Sec: 4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable.

Sec: 5 Mine subsidence

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

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

NO

Sec: 6 Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*:
Not affected by road widening
- (b) any environmental planning instrument:
NO
- (c) any resolution of the council:
NO

Sec: 7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council,

that restricts the development of the land because of the likelihood of:-

Land slip:
NO

Bushfire:
See Section 11.

Tidal inundation:
NO

Subsidence:
NO

Acid Sulfate soils:
NO

Sec: 7A Flood related development controls information

- (1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.
The Lane Cove Development Control Plan - effective 22 February 2010 - applies

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

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

Overland Flow

A study is currently being undertaken to determine exact locations subject to overland flow in the Municipality of Lane Cove. Until such time as Council has completed this work, property owners should conduct their own investigations to be satisfied that this property is not affected by overland flow.

Words and expressions in this clause have the same meanings as in the instrument set out in the *Schedule to the Standard Instrument (Local Environmental Plans) Order 2006*.

Sec: 8 Land reserved for acquisition

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

NO

Sec: 9 Contributions plans

Lane Cove Section 94 Contributions Plan.

Sec: 9A Biodiversity certified land

Not applicable.

Sec: 10 Biobanking agreements

Not applicable.

Sec: 11 Bush fire prone land

All or some of the land is bush fire prone land as identified in the Lane Cove Bushfire Prone Land Map dated 21st October 2004.

Sec: 12 Property vegetation plans

Not applicable.

Sec: 13 Orders under Trees (Disputes Between Neighbours) Act 2006

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

NONE

Sec: 14 Directions under Part 3A



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

NONE

Sec: 15 Site compatibility certificates and conditions for seniors housing

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

NO

Sec: 16 Site compatibility certificates for infrastructure

Whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land.

NO

Sec: 17 Site compatibility certificates and conditions for affordable rental housing

Whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land:

NO

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

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

NO

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

NO

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

NO

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

NO

(e) that the land to which the certificate relates is the subject of a site audit statement within the

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Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

meaning of that Act - if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

NO

Council records do not have sufficient information about the uses (including previous uses) of the land which is the subject of this Section 149 certificate. To confirm that the land hasn't been used for a purpose which would be likely to have contaminated the land, parties should make their own enquiries as to whether the land may be contaminated.

For further information, please contact the Strategic Planning Department on 9911 3612.



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

PLANNING CERTIFICATE

Under Section 149 Environmental Planning and Assessment Act, 1979

Applicant:

SMEC Testing Services Pty Ltd

PO Box 6989

Wetherill Park

NSW 2164

Date of Issue:

02/12/2011

Council Reference:

49957

Applicant Reference:

0002778544

Certificate No:

1358

Owner(s):

Lane Cove Council

Property address: McMahon's Road LANE COVE NSW 2066

Description: LOT: 1 DP: 321353 LOC:

Property Reference: 13319

INFORMATION PROVIDED PURSUANT TO SECTION 149(2) OF THE ACT

The planning information contained in this certificate applies specifically to the land.

Table of contents

Description	Section No.
PART 2: Information for Section 149 (2)	
Names of relevant planning instruments and DCP	1
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Annual charges: Local Government Act – coastal protection	4B
Mine Subsidence	5
Road Widening and road realignment	6
Council and other public hazard risk restriction	7
Flood related development controls	7A
Land reserved for acquisition	8
Contributions plans	9
Biodiversity certified land	9A
Biobanking agreements	10
Bushfire prone land	11
Property Vegetation Plans	12
Orders under Trees (disputes between neighbours) act	13
Directions under part 3A	14
Site compatibility certificates and conditions for seniors housing	15
Site compatibility certificates for infrastructure	16
Site compatibility certificates and conditions for affordable affordable rental housing	17
Contaminated Land Management Act 1997s.59(2)	Note

To authenticate this certificate visit <http://www.lanecove.nsw.gov.au/CertCheck>

Cert. #:1358, Page 1 of 8

PO Box 20 Lane Cove NSW 1595. Lane Cove.

Email - lccouncil@lanecove.nsw.gov.au • Website - www.lanecove.nsw.gov.au • ABN 42 062 211 626



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

Table of contents

PART 5: Additional information for Section 149 (5)

Part 5

PART 2:

Sec: 1 Names of relevant planning instruments and DCP

- (1) The name of each environmental planning instrument that applies to the carrying out of development on the land.
 - Lane Cove Local Environment Plan 2009 - gazetted on 19 February 2010
 - State Environmental Planning Policy No.4: Development Without Consent and Miscellaneous Complying Development (Amendment No. 15 - gazetted 4 December 1981 - 3 March 2006
 - State Environmental Planning Policy No.6: Number of storeys in a building - gazetted 10 December 1982
 - State Environmental Planning Policy No.19: Bushland in Urban Areas - gazetted 24 October 1986
 - State Environmental Planning Policy No.32: Urban Consolidation (Redevelopment of Urban Land) - gazetted 15 November 1991
 - State Environmental Planning Policy No.55: Remediation of Land - gazetted 28 August 1998
 - State Environmental Planning Policy No.64: Advertising and Signage - gazetted 16 March 2001
 - State Environmental Planning Policy (BASIX) 2004 - gazetted 25 June 2004
 - State Environmental Planning Policy (Housing for seniors or people with a disability) 2004 Amendment No.2 - gazetted 31 March 2004 effective 12 October 2007
 - State Environmental Planning Policy (Temporary Structures and Places of Public Entertainment) - gazetted 28 September 2007
 - State Environmental Planning Policy (Infrastructure) 2007 - Gazetted 21 December 2007; commenced 1 January 2008
 - State Environmental Planning Policy (Exempt & Complying Development Codes) - gazetted 12 December 2008
 - State Environmental Planning Policy (Major Projects) 2005 - gazetted 1 August 2005
- (2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved)
- (3) The name of each development control plan that applies to the carrying out of development on the land.
 - Lane Cove Development Control Plan, effective 22 February 2010



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

Sec: 2 Zoning and land use under relevant LEPs

The land is zoned: Public Recreation RE1

1 Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.
- To make provision for rights of public access to more foreshore land and to link existing open space areas.

2 Permitted without consent

Environmental protection works

3 Permitted with consent

Child care centres; Community facilities; Environmental facilities; Kiosks; Marinas; Mooring pens; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Signage; Take away food and drink premises

4 Prohibited

Any development not specified in item 2 or 3



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Fax: 9911 3600

- (5) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:
Not Applicable

- (6) Whether the land includes or comprises critical habitat:
NO

- (7) Whether the land is in a conservation area (however described)::
NO

- (8) Whether an item of environmental heritage (however described) is situated on the land::
NO

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

Not applicable.

Sec: 3 Complying development

(1) Whether or not the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (c) and (d) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

(2) If complying development may not be carried out on that land because of the provisions of clauses 1.17A (c) and (d) and 1.19 of that Policy, the reasons why it may not be carried out under that clause

Sec: 4 Coastal Protection

Whether or not the land is affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that the council has been so notified by the Department of Services, Technology and Administration.

NO

Sec: 4A Certain information relating to beaches and coasts

Not applicable.

Sec: 4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable.

Sec: 5 Mine subsidence

To authenticate this certificate visit <http://www.lanecove.nsw.gov.au/CertCheck>

Cert. #:1358, Page 4 of 8

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Tel: 9911 3555

Fax: 9911 3600

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

NO

Sec: 6 Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the *Roads Act 1993*:
Not affected by road widening

(b) any environmental planning instrument:
NO

(c) any resolution of the council:
NO

Sec: 7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council,

that restricts the development of the land because of the likelihood of:-

Land slip:
NO

Bushfire:
See Section 11.

Tidal inundation:
NO

Subsidence:
NO

Acid Sulfate soils:
NO

Sec: 7A Flood related development controls information

- (1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.
The Lane Cove Development Control Plan - effective 22 February 2010 - applies



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

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

Overland Flow

A study is currently being undertaken to determine exact locations subject to overland flow in the Municipality of Lane Cove. Until such time as Council has completed this work, property owners should conduct their own investigations to be satisfied that this property is not affected by overland flow.

Words and expressions in this clause have the same meanings as in the instrument set out in the *Schedule to the Standard Instrument (Local Environmental Plans) Order 2006*.

Sec: 8 Land reserved for acquisition

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

NO

Sec: 9 Contributions plans

Lane Cove Section 94 Contributions Plan.

Sec: 9A Biodiversity certified land

Not applicable.

Sec: 10 Biobanking agreements

Not applicable.

Sec: 11 Bush fire prone land

The land is not identified on the Lane Cove Bushfire Prone Land Map dated 21st October 2004.

Sec: 12 Property vegetation plans

Not applicable.

Sec: 13 Orders under Trees (Disputes Between Neighbours) Act 2006

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

NONE

Sec: 14 Directions under Part 3A

If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a

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Cert. #:1358, Page 6 of 8



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

NONE

Sec: 15 Site compatibility certificates and conditions for seniors housing

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

NO

Sec: 16 Site compatibility certificates for infrastructure

Whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land.

NO

Sec: 17 Site compatibility certificates and conditions for affordable rental housing

Whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land:

NO

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

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

NO

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

NO

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

NO

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

NO

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



Lane Cove Council

48 Longueville Road, Lane Cove NSW 2066

Tel: 9911 3555

Fax: 9911 3600

NO

Council records do not have sufficient information about the uses (including previous uses) of the land which is the subject of this Section 149 certificate. To confirm that the land hasn't been used for a purpose which would be likely to have contaminated the land, parties should make their own enquiries as to whether the land may be contaminated.

For further information, please contact the Strategic Planning Department on 9911 3612.

Authenticate this certificate visit <http://www.lanecove.nsw.gov.au/CertCheck>

Cert. #:1358, Page 8 of 8

PO Box 20 Lane Cove NSW 1595, Lane Cove,
Email - lcouncil@lanecove.nsw.gov.au • Website - www.lanecove.nsw.gov.au • ABN 42 062 211 626

APPENDIX G – HISTORICAL TITLE SEARCH RESULTS

SEARCH REPORT

Re: Historical Search

266 Longueville Rd. Lane Cove

Lot 1 in DP 321353

Lot 1 in DP 91655

Lot 322 in DP 1102537

1. 1/321353 Title & Historical

Prior Title : Vol 4200 Fol 204

Owner : The Council of the Municipality of Lane Cove 1957

Owner : The Commonwealth of Australia 1928

2. 322/1102537 Title & Historical

Prior Title : Vol 4337 Fol 52

Owner : Council of the Municipality of Lane Cove 1958

Owner : The Cumberland County Council 1956

Owner : Dorothy Muriel MacDougall 1948

Owner : Ettie Emma Jane MacDougall 1929

3. 1/91655 Title & Historical

Prior Title Vol 8136 Fol 84

Owner : The Council of the Municipality of Lane Cove 1960

Owner : Archibald Little & John Yeomans by Grant in 1854.

23/11/2011

Per : John Gedz



Disclaimer: SAI Global Property has obtained this information from publicly available resources at a particular point in time. Whilst every endeavour has been made in the preparation of this report and to ensure that the records inspected are accurately reflected herein, we cannot guarantee the information provided is without error by us or the authority where we obtained the said information.

Locality : LANE COVE

Cadastral Records Enquiry Report

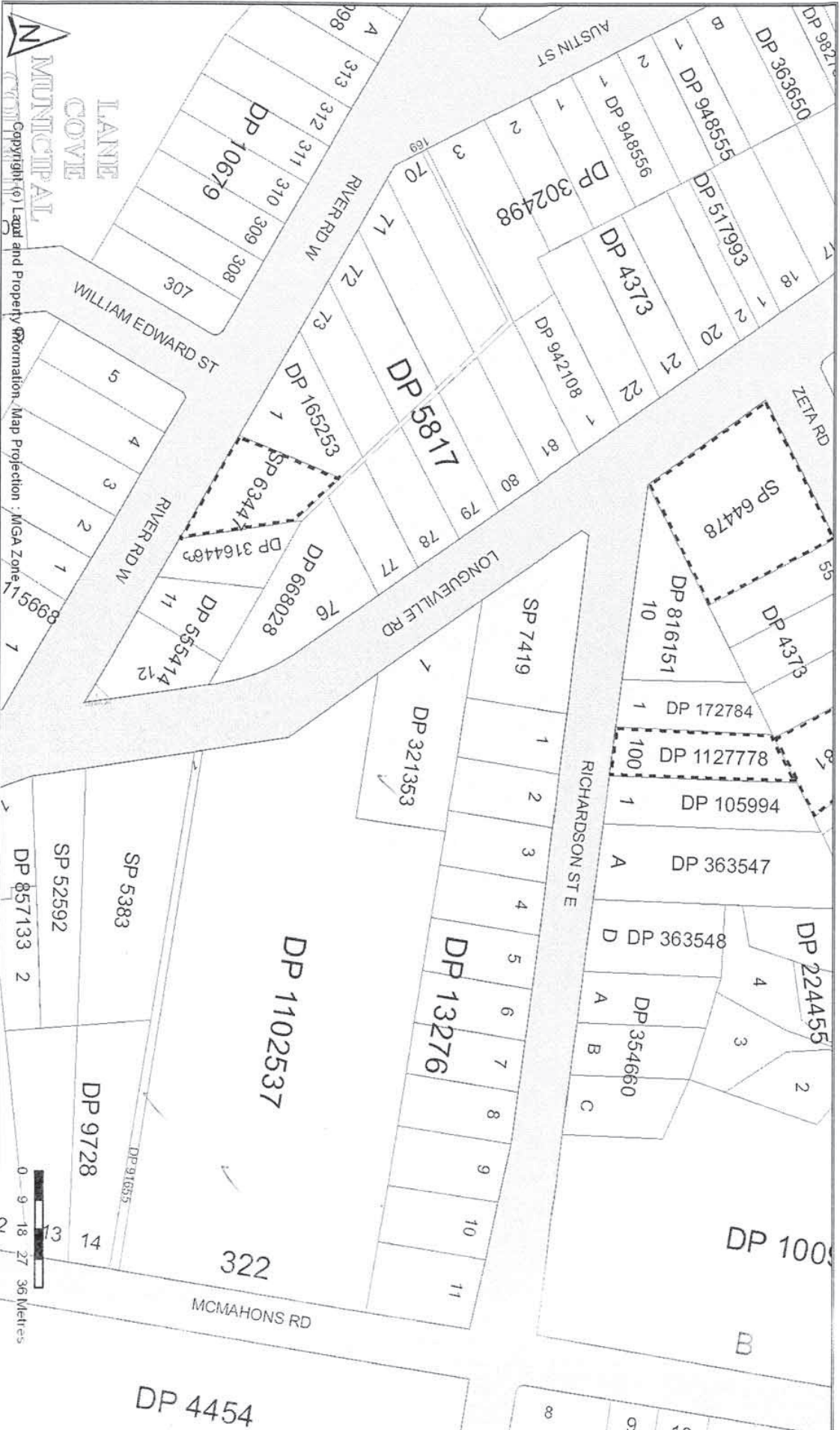
Requested Parcel : Lot 1 DP 321353

LGA : LANE COVE

Parish : WILLOUGHBY

Identified Parcel : Lot 1 DP 321353

County : CUMBERLAND



LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/321353

SEARCH DATE	TIME	EDITION NO	DATE
18/11/2011	4:25 PM	-	-

VOL 4200 FOL 204 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LOT 1 IN DEPOSITED PLAN 321353
LOCAL GOVERNMENT AREA LANE COVE
PARISH OF WILLOUGHBY COUNTY OF CUMBERLAND
TITLE DIAGRAM DP321353

FIRST SCHEDULE

THE COUNCIL OF THE MUNICIPALITY OF LANE COVE (T G835734)

SECOND SCHEDULE (2 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 G835735 CAVEAT BY THE REGISTRAR GENERAL

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

J/APEX62362428

PRINTED ON 18/11/2011

Espreon hereby certifies that the information contained in this document has been provided electronically by the Registrar-General in accordance with Section 96B(2) of the Real Property Act, 1900.

*Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title.

Warning: The information appearing under notations has not been formally recorded in the register.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH
-----SEARCH DATE

18/11/2011 4:27PM

FOLIO: 1/321353

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

Prior Title(s): VOL 4200 FOL 204

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
14/2/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
3/7/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED

*** END OF SEARCH ***

J/APEX62362428

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22.

Fees—
Registration
Endorsements

D

(3)

G-835735



New South Wales



**CAVEAT BY THE REGISTRAR GENERAL FORBIDDING REGISTRATION OF
DEALING WITH ESTATE OR INTEREST**

(REAL PROPERTY ACT, 1900.)

I, THE REGISTRAR GENERAL OF NEW SOUTH WALES, forbid the registration
of any dealing affecting the land comprised in Certificate of Title dated

19 , Vol. 4200 Folio 264

in favour of *The Estate of the Mar of Lane Cove*

not in accordance with the terms of a certain declaration of Trust dated

19 , and filed in the Land Titles

Office, Sydney, No. 18410

DATED this 12th day of November 1907.

J. H. Pells



Deputy Registrar General.

Signed in my presence this 28-11-07 }
day of 19 . }

P. Little

8835735

No. Caveat against

THE REGISTRAR GENERAL,

Caveator,

Caveatee.

Particulars entered in Register Book, Vol. 4200

Folio 204

the 27th day of November 1967

at 5.45 p.m. in the afternoon.

S. H. Ellis



Deputy Registrar General

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 322/1102537

SEARCH DATE	TIME	EDITION NO	DATE
18/11/2011	4:25 PM	-	-

VOL 4337 FOL 52 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LOT 322 IN DEPOSITED PLAN 1102537
AT LANE COVE
LOCAL GOVERNMENT AREA LANE COVE
PARISH OF WILLOUGHBY COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1102537

FIRST SCHEDULE

LANE COVE COUNCIL

SECOND SCHEDULE (2 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- * 2 H19905 CAVEAT BY THE REGISTRAR GENERAL

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

J/APEX62362428

PRINTED ON 18/11/2011

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH
-----SEARCH DATE

18/11/2011 4:28PM

FOLIO: 322/1102537
-----First Title(s): OLD SYSTEM
Prior Title(s): VOL 4337 FOL 52

Recorded	Number	Type of Instrument	C.T. Issue
-----	-----	-----	-----
25/8/2006	DP1102537	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED

*** END OF SEARCH ***

J/APEX62362428

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22

3



H19905T

Fees—
Registration
Endorsements

H19905



New South Wales



£ 11.10 : —
12.8.58

CAVEAT BY THE REGISTRAR GENERAL FORBIDDING REGISTRATION OF
DEALING WITH ESTATE OR INTEREST

(REAL PROPERTY ACT, 1900.)

I, THE REGISTRAR GENERAL OF NEW SOUTH WALES, forbid the registration
of any dealing affecting the land comprised in Certificate of Title dated

16th October 1959, Vol. 4337 Folio 52.

in favour of Council of the Municipality of Lane Cove

not in accordance with the terms of a certain declaration of Trust dated

16th July 1958, and filed in the Land Titles

Office, Sydney, No. 18522

DATED this 25th day of August 1958



Deputy Registrar General.

Signed in my presence this _____ }
day of _____ 19 ____ }

H 19905

H 019905

No. Caveat against

THE REGISTRAR GENERAL.

Caveator,

Caveatee

Particulars entered in Register Book, Vol. 4337

Folio 52

M.P.D.

the 27th day of August 1958

at 10 o'clock in the fore noon.

Deputy Registrar General



[Handwritten signature]

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH
-----FOLIO: 1/91655

SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
18/11/2011	4:25 PM	-	-

VOL 8136 FOL 84 IS THE CURRENT CERTIFICATE OF TITLE

LAND
-----LOT 1 IN DEPOSITED PLAN 91655
LOCAL GOVERNMENT AREA LANE COVE
PARISH OF WILLOUGHBY COUNTY OF CUMBERLAND
TITLE DIAGRAM DP91655FIRST SCHEDULE

THE COUNCIL OF THE MUNICIPALITY OF LANE COVE

SECOND SCHEDULE (1 NOTIFICATION)

1 LAND EXCLUDES MINERALS (S.536AA LOCAL GOVERNMENT ACT, 1919)

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

J/APEX62362428

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH
-----SEARCH DATE

18/11/2011 4:27PM

FOLIO: 1/91655

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

Prior Title(s): VOL 8136 FOL 84

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
31/8/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
11/10/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED

*** END OF SEARCH ***

J/APEX62362428

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41655

1960 JUN 28 PM 12:24
1960 AUG 22 PM 12:26



1960 JUN 28 PM 12:29
H-10-0
22 8/60

APPLICATION FOR CERTIFICATE OF TITLE FOR RESUMED LAND
REAL PROPERTY ACT, 1900. SECTION 31A.

P3788
THE COUNCIL OF THE MUNICIPALITY OF LANE COVE hereby certifies that a Notification of Resumption, a copy of which is set out hereunder, appeared in the Government Gazette Number 139 of the fourth day of December, 1959 and the said COUNCIL OF THE MUNICIPALITY OF LANE COVE hereby applies to the Registrar General for a Certificate of Title for the land described in the said Notification which is not under the provisions of the Real Property Act, 1900, and certifies this application to be correct for the purposes of the said Act.

LOCAL GOVERNMENT ACT, 1919.

LANE COVE MUNICIPAL COUNCIL: PROPOSED RESUMPTION OF LAND
AT LANE COVE.

HIS Excellency the Governor, with the advice of the Executive Council and in pursuance of the Local Government Act, 1919, has approved of the Lane Cove Municipal Council's causing a notice of resumption of the land described in the Schedule hereto, together with a description of such land, to be published in the Government Gazette and in a newspaper circulating in the area in which the land is located, such land being required by the Lane Cove Municipal Council for the purpose of public recreation. (M.59-1,220)

J.B. RENSHAW, Minister for Local Government.

Department of Local Government,
Sydney, 28th October, 1959.

SCHEDULE.

Grant
S.198 P.32
24/2/1960
All that piece or parcel of land situate in the Municipality of Lane Cove, parish of Willoughby, and county of Cumberland being part of 320 acres (portion 322 of the parish), granted to Archibald Little and John Yeomans by Crown Grant dated 17th July, 1954: Commencing at the south western corner of the land comprised in Real Property Application 8,509; and

Cert. of T. issued Vol. 8136
Dated 4 APR 1961

bounded thence on the north by the southern boundary of the aforesaid land being a line bearing 90 degrees 50 minutes 40 seconds for 534 feet 1 $\frac{1}{2}$ inches to the south-eastern corner of the aforesaid land; and bounded thence on the east by the western alignment of McMahons road, being a line bearing 180 degrees 51 minutes for 9 feet 6 $\frac{1}{2}$ inches to the north-eastern corner of the land comprised in lot 14 in deposited plan 9,728; and thence on the south by the northern boundaries of the land comprised in lots 14 and 1 in deposited plan 9,728; being a line bearing 270 degrees 49 minutes for 531 feet to the north-western corner of the land comprised in the aforesaid lot 1; and thence on the west by the eastern alignment of Longueville-road, being a line bearing 343 degrees 7 minutes for 10 feet 3 $\frac{1}{2}$ inches to the point of commencement, and containing an area of 18 $\frac{3}{4}$ perches, and shown on plan with the Department of Local Government, Sydney, and also on plan annexed hereto marked "X".

Sealed the first day of July, 1960.

the Council of
THE COMMON SEAL of / THE MUNICIPALITY OF

LANE COVE was hereto duly affixed in pursuance of a resolution by the said Council authorising the said Seal to be so affixed.

[Signature]

MAYOR.

[Signature]

TOWN CLERK.

bounded thence on the north by the southern boundary of the aforesaid land being a line bearing 90 degrees 50 minutes 40 seconds for 534 feet 1 $\frac{1}{4}$ inches to the south-eastern corner of the aforesaid land; and bounded thence on the east by the western alignment of McMahon's road, being a line bearing 180 degrees 51 minutes for 9 feet 6 $\frac{1}{2}$ inches to the north-eastern corner of the land comprised in lot 14 in deposited plan 9,728; and thence on the south by the northern boundaries of the land comprised in lots 14 and 1 in deposited plan 9,728; being a line bearing 270 degrees 49 minutes for 531 feet to the north-western corner of the land comprised in the aforesaid lot 1; and thence on the west by the eastern alignment of Longueville-road, being a line bearing 343 degrees 7 minutes for 10 feet 3 $\frac{1}{2}$ inches to the point of commencement, and containing an area of 18 $\frac{3}{4}$ perches, and shown on plan with the Department of Local Government, Sydney, and also on plan annexed hereto marked "X".

Sealed the first day of July, 1960.

THE COMMON SEAL of the Council of / THE MUNICIPALITY OF

LANE COVE was hereto duly affixed in pursuance of a resolution by the said Council authorising the said Seal to be so affixed.

[Signature]

MAYOR.

[Signature]

TOWN CLERK.

202

New South Wales

B IC



68136004

Primary Appn No. 41655

Reference to Lost Title

Vol.

Fol.

Charting Map Lane Cove Sheet 6



REGISTER BOOK

Vol. 8136 Fol. 84

Issued on Primary Application No. 41655

CANCELLED **W**
ON ISSUE OF NEW FOLIO 1/91655

S
GRN

THE COUNCIL OF THE MUNICIPALITY OF LANE COVE, 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
in the Municipality of Lane Cove Parish of Willoughby and County of Cumberland
shown in the plan hereon and therein edged red and also shown in plan lodged with Primary Application No. 41655 being part
of Portion 322 granted to Archibald Little and John Yeomans on 17th July 1854.
EXCEPTING THEREOUT the minerals specified in Section 536AA of the Local Government Act 1919.

In witness whereof I have hereunto signed my name and affixed my Seal, this

Fourth

day of

April

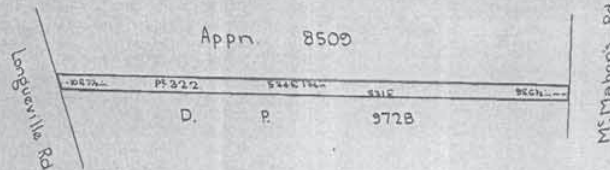
, 1961

Signed in the presence of

M. J. Miller

J. J. J. J.

Registrar-General.



Area: 18 3/4 per.
Scale: 100 feet to one inch.

THE LAND
WITHIN DESCRIBED IS
LOT 1 IN DP 91655

NO FEE

REGISTERED

Persons are cautioned against altering or adding to this Certificate or any notification thereon.

PA. 41655

[CERTIFICATE OF TITLE]

New South Wales.

Appn. No. 8509

Reference to last certificate,

Vol. 3098 Fol. 92

Register Book.

Vol. 4200 Fol. 204.

CANCELLED

ON ISSUE OF NEW FOLIO 1/321353

THE COMMONALTY OF ABBAYALL, transferee under instrument of transfer No. 719892 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 —
in the Municipality of Lane Cove Parish of Willoughby, and County of Cumberland, containing one rood twenty four and one quarter perches —
as shown in the Plan hereon and therein edged red, being also shown in plan annexed to the said instrument of transfer No. 719892 being part of Section II of Nicholas Estate and being also part of 320 acres (portion 322 of Parish) delineated in the Public Map of the said Parish in the Department of Lands originally granted to Archibald Little and John Yeomans by Crown Grant dated the 17th day of July 1894.

In witness whereof I have hereunto signed my name and affixed my Seal, this 10th day of October 1905.



Registrar General

CAVEAT by the Registrar General
No. 6835733
Entered 29th November 1905
J. H. M.
REGISTRAR GENERAL

NO FURTHER DEALINGS TO BE REGISTERED

Amongst the reservations and conditions contained in the Grant above referred to are reservations of all mines of gold and of silver.

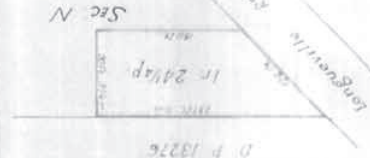


Registrar General

NOTIFICATION REFERRED TO.

IN DP182753
LOT 1

Area: 100.75. By plan laid.



REGISTRATION OF TITLE

ORDER NO. B82878

RESIDUE AFTER TRANSFER NO.B 719892

Vol. 4337 Fol. 52

CANCELLED
 * ISSUE OF NEW FOLIO 322/1102517



New South Wales.

Appl. No 6509
 Refer to last certificate,
 Vol. 3098 Fol. 92

ESTEE LEE, JANE MADOGALL of Balmuir, Spinster, by virtue of certificate of Title Volume 3098 Folio 92 now surrendered as to residue after Transfer No.B 719892 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, in the Municipality of Lane Cove Parish of Willoughby and County of Cumberland containing Three acres thirty five and three quarters perches as shown in the Plan hereto and therein edged red, being part of Section II of Nicholls Estate and being also part of 320 acres (Portion 322 of Parish) delineated in the Public Map of the said Parish in the Department of Lands originally granted to Archibald Little and John Yeomans by Crown Grant dated the 17th day of July 1854.

In witness whereof I have hereunto signed my name and added my seal this 17th day of July 1892

John Madogall
 John Madogall

Registrar General



NOTIFICATION HEREBY TO

Amongst the reservations and conditions contained in the Grant above referred to are reservations of all mines of Gold and of Silver.

Registrar General.

REGISTRATION BY TRANSFER
 No. 6509
 A validly made and signed by J. Madogall
 of the land in the Certificate of Title
 Volume 3098 Folio 92
 Produced 17th July 1892
 1892
 1892

REGISTRATION BY TRANSFER
 No. 6509
 A validly made and signed by J. Madogall
 of the land in the Certificate of Title
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 Produced 17th July 1892
 1892
 1892

Source of the Inhabitability of Zone

11-10-04 8-10-04 52

21-11-04 52

H19405

21-11-04 52

COMPUTER FOLD
DETAILS TO BE REPRODUCED

APPENDIX H – RESPONSE FROM WORKCOVER



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

Our Ref: D11/147592
Your Ref: David Yonge

23 November 2011

Attention: David Yonge
SMEC Testing Services Pty Ltd
PO BOX 6989
Wetherill Park NSW 2164

Dear Mr Yonge,

RE SITE: 266 Longueville Rd Lane Cove NSW 2066

I refer to your site search request received by WorkCover NSW on 21 November 2011 requesting information on licences to keep dangerous goods for the above site.

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above mentioned premises.

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

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Team

APPENDIX I – SUMMARY OF CONTAMINATION RESULTS

Comprehensive Environmental Data Report: Site Analysis & Remediation Progress																
Analytes	Borehole No.										NEPM Background Ranges	PILs	NSW OEH Threshold Concentrations	SIL (Column 1) Residential Land Use With Accessible Soil	SIL (Column 2) Residential Land Use With Minimal Opportunities for Soil Access	SIL (Column 3) Parks Recreational Open Space and Playing Fields
	BH10	BH11	BH11	BH11	BH12	BH12	BH12	BH13	BH13	BH13						
	1.0-1.3	1.3-1.5	4.3-4.5	8.6-8.8	0.1-0.3	1.3-1.5	4.3-4.5	1.3-1.5	4.3-4.5	7.3-7.5 (†)						
Sample Depth (m)																
Metals	As	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cd	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Cr	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Pb	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Co	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Fe	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Al	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cu	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Zn	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Monocyclic Aromatic Hydrocarbons (MAHs)																
BaP	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
BaA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Fluoranthene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[a]pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[b]fluoranthene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[k]fluoranthene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Indeno[1,2,3-cd]pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[e]pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Volatile Organic Compounds (VOCs)																
Chloroform	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Trichloroethylene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Perchloroethylene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total Petroleum Hydrocarbons (TPHs)																
TPH	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Polycyclic Aromatic Hydrocarbons (PAHs)																
Fluoranthene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[a]pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[b]fluoranthene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[k]fluoranthene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Indeno[1,2,3-cd]pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[e]pyrene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Organochlorine Pesticides (OCPs)																
Dieldrin	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
DDT	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Endrin	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Organophosphorus Pesticides (OPPs)																
Chlorpyrifos	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Malathion	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Phenolic Compounds																
Phenol	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Polychlorinated Biphenyls (PCBs)																
PCB 153	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
PCB 180	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Cyamide	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Fluoride	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Asbestos (fibres)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

