SMEC Testing Services Pty Ltd
ACN 101 164 792 ABN 22 101 164 792
CONSULTING GEOTECHNICAL & ENVIRONMENTAL ENGINEERS
Unit 14
1 Cowpasture Place
WETHERILL PARK
NSW 2164
Phone: (02) 9756 2166 Fax: (02) 9756 1137
Email: enquiries@smectesting.com.au
PO BOX 6989
Wetherill Park
NSW 2164

PRELIMINARY SITE INVESTIGATION, 84 CENTENARY DRIVE, STRATHFIELD

FOR

STRATHFIELD GOLF CLUB

PROJECT NO. 19623/4145C **MAY 2014**
REPORT NO. 14/0671

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EXECUTIVE SUMMARY

A preliminary site investigation (PSI) was performed for a property at 84 Centenary Drive, Strathfield, New South Wales for Strathfield Golf Club. The objectives of the investigation were to provide advice on the potential for environmental exposures at the property due to soil and groundwater contamination that may be significant for both a mixed commercial and medium-high density residential land use setting. The investigation was performed in accordance with Environment Protection Authority (EPA) and national guidelines for the assessment and management of site contamination.

The site is approximately two hectares in area and was vacant land before being developed as a golf course around 1940, a use which has continued until the present day. The main clubhouse facility and car parking area for the golf club is located in the western portion of the site, whilst the eastern portion comprises a practice fairway. Further, one small underground petroleum storage systems (UPSSs) that is used to store petrol is located in the car parking area in the western portion of the site, and which appears to have been installed around 1960.

Soil was sampled from a total of ten locations across the site for this investigation, and one on-site groundwater monitoring well was also installed and sampled. The results of the soil sampling program shows that the concentrations of chemical contaminants measured in the soils across the site are generally low and below criteria that are protective of human-health and the environment for a residential land use setting where the soil is accessible to site users. Further, the results of the groundwater sampling show that the site is not expected to be the source of any unacceptable groundwater impacts, and that the UPSS is unlikely to have leaked significantly.

Based on the results of this investigation, the site is considered to be suitable for the proposed mixed commercial and medium-high density residential redevelopment. However, the UPSS located in the south-western portion of the site remains in use. This facility should be removed at the time it becomes disused, and the excavated area should also be validated to determine if the surrounding soil is impacted with petroleum hydrocarbons. If any significant leakage is confirmed to have occurred then further groundwater sampling should also be performed.

1. INTRODUCTION

SMEC Testing Services Pty Limited (STS) was engaged by Strathfield Golf Club to undertake a preliminary site investigation for the property located at 84 Centenary Drive, Strathfield, NSW (the 'site'). The objectives of the investigation were to evaluate the potential for soil contamination and groundwater impacts at the site that may be significant for a mixed commercial and medium-high density residential land use setting. The investigation was performed in accordance with Environment Protection Authority (EPA) and national guidelines for the assessment and management of site contamination.

The scope of the investigation included:

- Review of historical aerial photographs and 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, EPA and WorkCover NSW records;
- Site inspection;
- Appraisal of local geology and hydrogeology;
- Soil sampling from ten locations across the site and laboratory analysis of the soil samples retrieved for a broad screen of potential chemical contaminants;
- Installation and development of one groundwater monitoring well and analysis of the groundwater samples for key contaminants of concern;
- Assessment of analytical data and quality assurance (QA);
- Appraisal of the contaminant concentrations in the soil and groundwater based on the results of the investigation, 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 EPA guidelines; and
- Preparation of a confidential report to Strathfield Golf Club on the results of the investigation.

2. REDEVELOPMENT AND PROPOSED LAND USE

We understand that the western portion of the site is proposed to be redeveloped for mixed commercial and high-density residential purposes, whilst a medium density residential use is proposed for the eastern portion of the site. It would be expected that general landscaping zones and/or unsealed land within individual residential allotments would be limited within the proposed mixed use areas of the site, however, it is likely that more extensive unsealed land would be present within the area which is to be redeveloped for medium-density residential purposes.

3. SITE IDENTIFICATION

The site at 84 Centenary Drive, Strathfield has an area of approximately two hectares and is defined as Lot 1and part of Lot 2 in Deposited Plan (DP) 854298 and part of Lot 1 in DP 130917, Parish of Liberty Plains, County of Cumberland. The location of the site is shown on Drawing No. 14/0671/1.

The site is within the Strathfield City Council local government area, and according to their 2012 Local Environmental Plan the land is zoned 'R2 – Low Density Residential' and 'RE2 – Private Recreation'.

4. PREVIOUS ENVIRONMENTAL ASSESSMENTS

There are no known previous environmental assessments relating to the site.

5. SITE FEATURES

The site was inspected on 31 March and 17 April 2014 to confirm the condition of the land and to identify potential contamination sources. A plan showing the current site configuration is shown on Drawing No.14/0671/2. The key site features as determined by the site inspection are:

- The site has a slight slope to the east-northeast, however, sections of the site are essentially flat. This morphology suggests that minor filling has occurred for levelling purposes, particularly in the west of the site in the vicinity of the car park and club house.
- The site forms part of Strathfield Golf Club, and is accessed via Centenary Drive which bounds the site to the west. A single story, brick club house building is located on the north-west boundary of the site and is surrounded by an asphalt covered car parking area. The western portion of the site comprises a practice fairway which is covered with grass and lined by mature trees.
- Two steel sheds are also located within the car parking area, which are used as used as storage facilities for grounds maintenance. In addition, one underground petroleum storage system (UPSS) is located adjacent to the eastern most shed. This facility has a capacity of 5 000 L and is used to store petrol for use in maintenance vehicles. Apart from the UPSS irrigation piping and standard stormwater and sewage services, no evidence of additional below ground facilities was identified on the site during our site inspections.
- The land to the south of the site is occupied by a school, residential properties are located on the land to the east and fairways of the golf club are located to the north. The land to the west of the site across Centenary Drive is used for commercial/industrial purposes, although an area of vacant land is also present.

6. GEOLOGY AND HYDROGEOLOGY

The Geological Survey of NSW 1:100,000 Sydney Geological Map (Sheet 9130) shows that the site is underlain by the Middle Triassic Age 'Bringelly Shale', which comprises shale, carbonaceous claystone, laminite and fine to medium grained lithic sandstone. Further, our review of the Acid Sulfate Soil (ASS) maps provided on the NSW EPA Natural Resource Atlas (NR Atlas) shows that the site is located on land that is not expected to be affected by ASS. This is supported by the geology and geomorphology of the site.

The natural soils encountered during the investigation comprised silty clays, which are consistent with residual soils weathered from the regional geological formation. In addition, shale bedrock was encountered in one borehole at a depth of 2 m below the land surface.

A layer of fill between 0.2 m and 0.6 m in thickness was also identified at the majority of sample locations. The fill material was observed to be variable and comprised silty clay, gravelly silty clay, sandy gravel, clayey silty sand, silty sandy clay and gravelly clayey sand. Further, the fill material appeared to be generally free of anthropogenic wastes.

A search of the Department Natural Resources (DNR) groundwater database was also performed to identify wells in the vicinity of the site. The search results identified one registered groundwater monitoring well located within 1 km of the site, which is registered for domestic purposes. However, no aquifer depth and lithology records are available for this well.

The depth to groundwater measured in the onsite monitoring well which was sampled as part of this investigation was 2.9 m below the land surface. Further, the groundwater flow direction at the site is expected to be to the east in alignment with the natural hill slope contour and toward Cooks River,which is located to the east of the site.

Based on the observations made during our on-site soil and groundwater sampling activities, the results of the groundwater database search and our review of the site geology and regional groundwater conditions, a summary of the site hydrogeology is summarised in Table 6.1.

TABLE 6.1 – SITE HYDROGEOLOGY

Aquifer Type and Lithology:	Clay and Shale[1,2]
Perched groundwater:	Not expected to be present[1]
Depth to Aquifer at Site:	Approximately <5 m[1,2]
Local Groundwater Flow Direction:	East to Southeast[2]
Regional Groundwater Flow Direction:	East to Southeast[2]
Receiving Environments:	Cooks River located approximately 250m from the site boundary to the east which flows southeast towards Botany Bay.[2]

[1] Actual conditions based on observations made during on-site soil and groundwater sampling
[2] Inferred conditions based on site/regional geology and geomorphology.

7. 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;
- Historical land titles;
- WorkCover NSW records.
- EPA records; and
- Section 149 (2) Certificates provided by Strathfield City Council.

7.1 Aerial Photographs

Aerial photographs from 1930, 1961, 1970, 1986, 1994, 2002 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 A, and a description of the observations made is provided in Table 7.1.

TABLE 7.1 – AERIAL PHOTOGRAPH OBSERVATIONS

Year	Site Features	Surrounding Land Use
1930	Whilst the photograph is of poor quality, however the site appears to be vacant and unused.	The land surrounding the site also appears to be largely vacant and unused, however, the land to the west of the site appears to be in the early stages of residential subdivision.
1961	The site now appears to form part of a golf course, and a clubhouse building is present in the west of the site.	The land to the north of the site is developed into a golf course. Residential properties are located to the east of the site and the high school has been built to the south.
1970	The site features remain largely unchanged, however, a car park has been constructed around the clubhouse building. Two sheds have also been constructed to the south of the new car parking area.	The land surrounding area remains essentially unchanged. However, the school to the south has cleared and appears to form part of a sports field.

TABLE 7.1 (CONT) – AERIAL PHOTOGRAPH OBSERVATIONS

Year	Site Features	Surrounding Land Use
1986	The site features are essentially unchanged.	The land surrounding the site remains largely unchanged, however the school on the land to the south has undergone an extension.
1994	The site features are essentially unchanged.	The land surrounding the site remains largely unchanged.
2002	The site features are essentially unchanged. However one of the two previously constructed sheds on the southern boundary has been demolished and a new shed has been constructed in close proximity to the previous one. The roof of the club house has also been refurbished.	The land surrounding the site remains largely unchanged; however, the land to the west appears to be in the process of being redeveloped.
2005	The site features are essentially unchanged.	The land surrounding the site remains largely unchanged.

7.2 Historical Title Search

Copies of the historical land title transfers were obtained from the Land Titles Office, and are provided in Appendix B. A summary of the property ownership details is summarised in Table 7.2, along with key leaseholders.

TABLE 7.2 – HISTORICAL LAND TITLE SUMMARY

Lot 1 DP 854298

Year	Registered Owner/Occupant
1943 - Present	Strathfield Golf Club
1914 - 1943	Chief commissioner for Railways and Tramways **LATER** Railway Commissioners for New South Wales and Commissioner for Railways

Lot 1 DP 130917

Year	Registered Owner/Occupant
1950 - Present	Strathfield Golf Club
Prior to 1950	Comprised a section of unnecessary road which was the subject of Crown Grant Vol 6201 Fol 163 dated 12.10.1950

7.3 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. The response provided by WorkCover is presented in Appendix C.

Information provided by WorkCover shows that three UPSSs have been located on the Strathfield Golf Club property. However, plans provided by WorkCover show that two of these facilities are located in a works compound on land approximately 750 m to the north-west of the site. Further, the UPSS which is located on the site is a 5 000 L facility that is used to store petrol, and appears to have been installed around 1960.

7.4 NSW EPA Records

The EPA contaminated land public register was inspected on 7 May, 2014 to determine if any notices have been issued for the site by EPA under the *Contaminated Land Management Act 1997* (CLM Act) or if the site is registered under the *Protection of the Environment Operations Act 1997* (POEO Act). Our review shows that the site is not listed under the provisions of these Acts, nor is it located in close proximity to a listed property. Further, our review shows that the site is not listed on EPA'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.

7.5 Section 149 (2) Certificates

Section 149 (2) Certificates were obtained from Strathfield City 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 D. The Section 149 (2) Certificates shows 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.

7.6 Site History Summary

The historical information reviewed shows that the site is likely to have comprised vacant land before being developed as golf course around 1940, a use which has continued until the present day. WorkCover records also show that a small UPSS has been located on the site since circa 1960.

8. POTENTIAL CONTAMINATION SOURCES

Based on our site history review and site inspection, an appraisal of the potential contamination risk at the site has been performed, the results of which are summarised in Table 8.1 below.

TABLE 8.1 – CONTAMINATION RISK ANALYSIS

Source	Location	Contamination Pathway Analysis	Potential for Soil Impacts
The site has historically been used as a golf course	Whole site	The site is expected to have been used as a golf course since the 1950s. In view of this, there is the potential for the near surface soils to have been impacted as a result of chemicals products, in particular pesticides and herbicides.	Low potential for soil impacts to have occurred that are significant for a residential land use setting. Also potential for groundwater impacts to have occurred is considered to be low.
Filling of the site for levelling purposes	Majority of site, with greatest depths in the west of the property	As the source of the fill cannot be confirmed it has the potential to be contaminated. However, the fill material appears to comprise reworked natural soil material is appears largely free of anthropogenic wastes.	Low -Moderate potential for soil impacts to have occurred that are significant for a residential land use setting. Also potential for chemically impacted fill to be a source of groundwater impacts is considered to be low.
One UPSS is located on the site and remains in use.	Located in the south-west of the site.	There is the potential for the UPSS to have leaked and resulted in hydrocarbon impacts to the surrounding soil and/or groundwater.	Moderate to High potential for soil and groundwater impacts to have occurred.

9. DATA QUALITY OBJECTIVES

The *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM) (and updated April 2013) 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

A mixed commercial and medium-high density residential use is proposed for the site. Prior to this assessment there was insufficient data to determine if the site is suitable for this proposed use.

Step 2 – Identify the Decision

To determine if the concentrations of contaminants in the soil and groundwater at the site present an unacceptable risk to human-health or the environment for a mixed commercial and residential land use setting.

Step 3 – Identify Inputs to the Decision

To enable a decision regarding the contamination status of the site and waste classification of the soil to be made, the following inputs were required:

- Soil sampling from ten locations across the site;
- Analysis of the soil samples for a broad screen of potential contaminants and including contaminants of concern;
- Groundwater sampling from one monitoring well (located within the vicinity of the UPSS) and analysis of the groundwater samples collected for contaminants of concern; 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 84 Centenary Drive, Strathfield, NSW. The boundaries of the site are defined in Section 3 and are shown on Drawing No. 14/0671/2.

Step 5 – Develop a Decision Rule

To determine if any soil or groundwater impacts at the site are significant for a mixed commercial and residential land use setting, data was compared to relevant EPA endorsed criteria. The criteria for this assessment are further discussed in Section 12.

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 Section 11.

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 9.2);
- Obtaining samples from an appropriate number of locations to provide a preliminary screen of the 2.08 hectare property in accordance with EPA 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.
- Installation of an appropriate number of groundwater monitoring wells and in an appropriate locations to determine if groundwater impacts have occurred due to leakages from the UPSS, and groundwater sampling using appropriate low-flow equipment in accordance with EPA requirements; and

- Analysis of the groundwater samples collected for the contaminants of concern typically associated with UPSS facilities.

10. FIELD INVESTIGATION

The field activities for the investigation were undertaken by STS between 31 March and 17 April 2014. The assessment was performed according to:

- EPA 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), Environment Protection and Heritage Council (EPHC)/National Environment Protection Council (NEPC), December 1999 (and updated NEPM of April 2013);
- *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);
- 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*.
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, published by the Australian and New Zealand Environment Conservation Council, 2000 (ANZECC 2000);
- *Australian Drinking Water Guidelines 6, 2011* (ADWG), published by the National Health and Medical Research Council (NHMRC) and National Resource Management Ministerial Council (NRMMC), 2011 (ADWG 2011); and

- *Australian/New Zealand Standard, Water Quality – Sampling Part II: Guidance on Sampling of Groundwaters, 5 April 1998 (AS/NZS 5667.II.1998).*

10.1 Soil Sampling

The sampling program involved the collection of soil samples from ten boreholes, which were positioned at evenly spaced locations across the site. This is a sufficient number of sample locations to provide a preliminary screen of the 2.08 hectare site for potential soil contamination in accordance with EPA guidelines and the NEPM. The sample locations and site features are shown on Drawing No. 14/0671/2.

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 qualified and experienced environmental engineers and/or technicians. A description of all the samples collected and their corresponding sample locations is provided on soil profile log sheets in Appendix E.

10.1.1 Soil Sample Handling & Equipment Decontamination

A drill rig equipped with solid rotary augers was used to obtain the soil samples, and the samples were retrieved directly from the augers by hand using disposable latex gloves. Following collection the samples were transferred into new clean jars prepared by Australian Laboratory Services (ALS). No sample mixing was carried out to ensure that the loss of any volatile compounds that could be present within the soil matrix is minimized. 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 ALS for analysis. Chain of Custody (COC) documentation was used to record and track the samples, and is provided in Appendix G.

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.

10.1.2 Analytical Program for Soil Samples

The selection of analytes was based on the findings of our site inspection, the site history review and EPA site assessment guidelines. The analytes for the soil samples included heavy metals, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs), monocyclic aromatic hydrocarbons (MAHs), polychlorinated biphenyls (PCB), organochlorine pesticides (OCP), organophosphorus pesticides (OPP), cyanide and asbestos.

The analytical program for the soil samples is outlined in the COC documentation, which is provided in Appendix G. ALS Sydney was selected as the primary laboratory, and ALS Brisbane was selected as the secondary laboratory for implementation of the field quality assurance program. ALS is NATA accredited for the analyses performed.

10.1.3 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 screening methodology involved the placement of a small portion of each sample (up to approximately 50g) into a sealed plastic 'snaplock' bag, which is kept at room temperature and out of direct sunlight for 10-20 minutes, before the PID reading as taken in the headspace above the sample. The PID was calibrated using a 100ppm isobutylene span gas prior to use.

The PID readings obtained during the soil vapour survey are presented on the soil profile logs in Appendix E. The concentration of ionisable vapours measured in the headspace above the soil ranged from 0.1 ppm to 0.9 ppm (v/v isobutylene equivalent), which is low and suggest that the soil is not significantly impacted with VOCs.

10.2 Groundwater Sampling

The groundwater investigation component of the project involved sampling from one onsite monitoring well installed specifically for this investigation, the purpose of which was to determine if any groundwater impacts have occurred due to leakages from the UPSS facility. The well was located down-gradient of the UPSS, and its position is shown on Drawing No. 14/0671/2.

The construction details for the new monitoring well are illustrated in Appendix E. The well was installed to a depth of approximately 7.5 m below the ground surface, and was constructed from screened and unscreened lengths of 50 mm diameter PVC standpipe casing. The well was screened from above the water table to the base, and a filter pack of 5mm grade sand was installed around the screened interval. A bentonite seal was installed around the upper, unscreened lengths of standpipe, followed by a concrete grout plug at the surface.

The groundwater well was gauged with an interface meter prior to sampling and it was confirmed that non-aqueous phase liquids (NAPLs) were not present in the well. The well was then purged and sampled using a low flow peristaltic pump, which is a low-flow/minimum drawdown method in accordance EPA guideline recommendations.

During the purging, key groundwater parameters were measured in the field, including pH, electrical conductivity (EC), redox potential (Eh), temperature and dissolved oxygen (DO). The volumes of groundwater purged from the wells prior to sampling and the drawdown over the purging and sampling event were also recorded. A summary of the parameters recorded for the well prior to sampling are presented in Table 10.2, and the well purging records sheet completed in the field are provided in Appendix F.

Table 10.2 Summary of Groundwater Pre-sampling Measurements

Groundwater Monitoring Well No.	Sample Date	Draw Down (m)	pH (Units)	EC (uS/cm)	Eh (mV)	Temp. (°C)	DO (ppm)
GW1	17/04/14	<0.2	4.57	10 849	172.9	22.8	0.59

Notes: DO = Dissolved Oxygen
EC = Electrical Conductivity
Eh = Redox Potential
*Pre-existing monitoring well

Groundwater samples were not collected until the groundwater parameters measurements were within 10% variance for three consecutive readings. With this approach, the samples collected are expected to be representative of the aquifer conditions beneath the site.

10.2.1 Groundwater Sample Handling & Equipment Decontamination

The groundwater samples were collected in bottles and vials provided by ALS, which were specifically prepared for the analyses performed. The bottles were filled directly from new low density polyethylene (LDPE) tubing and also reusable silicon tubing attached to the sampling pump. To ensure that no cross contamination occurred between sample locations, the silicon tubing was washed with a mixture of water and DECON 90 and rinsed with potable water before being used.

The sample was placed in ice-filled chests and transferred to ALS for analysis. Chain of Custody (COC) documentation was used to record and track the samples, and is provided in Appendix G. The environmental engineer signed the appropriate section of the COC form before providing the samples to the laboratory.

10.2.2 Analytical Program for Groundwater Samples

The groundwater samples were analysed for the key contaminants of concerns, these being heavy metals, TPH, MAH and PAH. The analytical program for the groundwater samples is outlined in the COC documentation (Appendix G). ALS Sydney was selected as the primary laboratory, and is NATA accredited for the groundwater analyses performed.

11. QUALITY ASSURANCE PROGRAM

Quality assurance (QA) of data was a key component of this investigation 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 EPA requirements, the NEPM and other key guidelines;
- Appropriate sample handling and transportation, and analysis of samples within recommended holding times;
- Appropriate construction, development and purging of the groundwater wells;
- The use of appropriate groundwater sampling equipment;
- 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.

11.1 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 EPA guidelines 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 soil sample;
- One inter-laboratory duplicate soil sample;

In view of the rigorous field-based decontamination procedures that were implemented during the investigation and that the results of the PID survey showed that the soil samples were not likely to be significantly impacted with VOCs, the collection of rinsate and trip blank samples was not considered necessary.

11.2 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.

11.3 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%.

12. ASSESSMENT CRITERIA

The quality criteria used during this investigation to appraise the significance of the contaminant concentrations in the soil and groundwater are outlined below.

12.1 Soil Criteria

Current EPA guidelines state that the key criteria for assessing potentially contaminated sites in New South Wales are the Soil Investigation Levels (SILs), and Provisional Phytoxicity-Based Investigation Levels (PILs), which are outlined in *Guidelines for the NSW Site Auditor Scheme, 2nd Edition* (DEC, 2006). These criteria have been adopted from Schedule B(1) of the National Environmental Protection Council document *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (NEPM).

The NEPM criteria comprise Health-Based Investigation Levels (HILs) and the Ecologically-Based Investigation Levels (EILs). The HILs are threshold values that are indicative of potential adverse impacts to human health, whilst the EILs are values that indicate a potential phytotoxic effect to plants.

In recent years the 1999 NEPM has been under review, with a revised version being released in April 2013 and which has been endorsed by EPA. The new 2013 NEPM has been developed using essentially the same framework as the 1999 version, however, it does provide updated HIL criteria for a range of chemical contaminants. It also builds on the EILs provided in the 1999 NEPM by outlining a more comprehensive set of EIL criteria and environmental screening levels (ESLs), which are designed not only to be indicative thresholds for phytotoxic effects to plants, but to be protective of ecosystems generally. The 2013 NEPM EILs and ESLs are generally less conservative than the NEPM 1999 EILs/ NSW EPA PILs, and the use of the EILs for several heavy metals (copper, nickel and zinc) requires key soil chemistry data, specifically the pH and cation exchange capacity (CEC) of the soils on a particular site. Further, the EIL for chromium requires an estimate of the clay content within soil. In the absence of pH, CEC and clay content data the original EIL/ NSW EPA PIL criteria may still be used as a screening tool for the evaluation of potential adverse impacts to plants.

Further, the 2013 NEPM outlines criteria for key volatile hydrocarbon compounds which are designed to be protective of human-health via a soil vapour inhalation exposure pathway (termed Health Screening Levels (HSLs)). The 2013 NEPM criteria should be used for environmental assessments in the Australian context as they are the most current and comprehensive set of screening criteria available. That is, they are used in preference to the SILs.

There are four main categories of HIL/HSL outlined in the 2013 NEPM, which are each used to appraise the risks posed by site contamination for different land use settings. These include:

Residential A: for a 'standard' residential land use with gardens and accessible soil, including children's day care centres, preschools and primary schools.

Residential B: for a residential land use with minimal opportunities for soil access, including properties with fully and permanently paved yard space such as high-rise apartments and flats

Recreational C: for parks, recreational open space, playing fields, including secondary schools

Commercial/Industrial D: for a commercial/industrial land use.

It is noted that the NEPM HILs do not provide criteria for some petroleum hydrocarbon compounds. In the absence of HIL criteria the '*threshold concentrations for a sensitive land use*' (EPA Threshold Concentrations) outlined in EPA's "*Guidelines for Assessing Service Station Sites*" (EPA, 1994) may be used as screening criteria, however, the 1999 NEPM HILs do provide threshold values for hydrocarbon fractions that may be adopted provided that speciation testing is undertaken for specific aromatic and aliphatic components.

Where a proposed land use will include more than one land use category (e.g. mixed residential/commercial development) the criteria which are protective of the most sensitive of the combined land uses should be adopted.

We understand that a mixed commercial and medium –high density residential land use is proposed for the site. Whilst areas of accessible soil would be expected to be minimal in the commercial and high-density residential areas, there is the potential that areas of unsealed land in the form of grass or garden areas may form part of individual residential allotments in medium-density residential areas. Therefore, the HIL Residential A criteria (for residential with accessible soil) are the most applicable and have been adopted for this investigation. In addition, the HSLs for vapour intrusion have been considered. The EPA Threshold Concentrations have also been adopted as screening criteria for petroleum hydrocarbon compounds in the absence of HIL criteria.

Given that areas of unsealed land would be expected to form part of the development, environmental screening criteria should also be considered. However, as no site specific data on soil pH, electrical conductivity and clay content were obtained for this investigation the 1999 NEPM EILs/NSW PILs have been adopted in additional to the generic EILs/ESLs provided in the 2013 NEPM.

The criteria which has been adopted for this investigation is outlined in Table 12.1 on the following page.

TABLE 12.1 – SITE SOIL ASSESSMENT CRITERIA
(all concentrations in units of mg/kg)

Contaminant	HIL Residential A	HSL Residential A[3]	2013 NEPM EIL/ESL	1999 NEPM EIL/EPA PIL	EPA Threshold Concentrations
Inorganics					
Arsenic (total)	100		100[7]		
Cadmium	20			3	
Chromium	100[1]			400[8]	
Copper	6000			100	
Lead	300		1100[7]		
Mercury	40[2]			1[2]	
Nickel	400			60	
Zinc	7400			200	
Organics					
TPH (C_6-C_9)					65
TPH (C_{10}-C_{36})					1000
F1 TPH (C_6-C_{10})[4]		50	180[6]		
F2 TPH (C_{10}-C_{16})[5]		280	120[6]		
F3 TPH (C_{16}-C_{34})			1300[6]		
F4 TPH (C_{34}-C_{40})			5600[6]		
Benzene		0.7	65[6]		1
Toluene		480	105[6]		1.4
Ethyl benzene			125[6]		3.1
Total Xylenes		110	45[6]		14
Naphthalene		5	178[7]		
Total PAHs	300				
Carcinogenic PAHs	3				
Aldrin + Dieldrin	6				
Chlordane	50				
DDT+DDD+ DDE	240				
Heptachlor	6				
PCBs	1				
Phenols	3000				

[1] Criterion for hexavalent chromium
[2] Criterion for inorganic mercury
[3] HSL for clay soils within 1 m of the land surface
[4] F1 TPH = TPH (C_6-C_{10}) minus BTEX fraction
[5] F2 TPH = TPH (C_{10}-C_{16}) minus naphthalene fraction
[6] Criterion for ESL fine texture grades
[7] Generic EIL
[8] Criterion for chromium III

12.2 Groundwater Criteria

EPA's *Guidelines for the Assessment and Management of Groundwater Contamination* (DEC, 2007) (Groundwater Guidelines) outlines four general Relevant Environmental Values (REVs) for groundwater that are required to be protected under state environmental legislation. These comprise:

- **Aquatic Ecosystems:** Including surface water and groundwater ecosystems.
- **Human Uses:** Including potable water supply, agricultural water supply (irrigation and stock watering), industrial water use, aquaculture and human consumption of aquatic foods, recreational use (primary and secondary contact) and visual amenity.
- **Human Health in Non-Use Scenarios:** Includes consideration of health risks that may arise without direct contact between human and the groundwater, for example, exposure to volatile contaminants above groundwater contaminant plumes.
- **Buildings and Structures:** Includes protection from groundwater contaminants that can degrade building materials through contact, for example, the weakening of building footings resulting from chemically aggressive groundwater.

In accordance with EPA's Groundwater Guidelines, when assessing potential risks from groundwater contamination all REVs need to be identified and evaluated with regard to potential impacts. It is stated in the guidelines that when groundwater comes to the surface, whether from natural seepages or existing or potential future bores, it must not compromise the REVs.

An exception to this rule applies where groundwater or 'hypopheric' ecosystems are present. In such circumstances, the groundwater itself forms the ecosystem (for example karst systems or coarse alluvial sediments linked to stream base flows) that should be protected. However, we have previously been advised by EPA (formerly Department of Natural Resources) groundwater ecologists that a hyopheric ecosystem, by definition, should include several levels of biologiocal taxa, including to macro invertebrate level.

Applying this rationale to the site, the geology of the aquifer beneath the site is characterized by fine grained residual soils and shale bedrock which have limited pore space and could not support macro-invertebrates. In view of this, the aquifer is not likely to constitute a hyopheric ecosystem.

There are several sets of criteria available that can be used to evaluate potential risks to REVs, and which have been adopted for this investigation. These include:

ANZECC 2000 Groundwater Guidelines

The ANZECC 2000 guidelines include a set of threshold criteria that are designed to be protective of aquatic ecosystems for both fresh and marine waters. These criteria are based on a review of the earlier ANZECC 1992 guidelines and include more recent water quality data for different regions and ecosystem types in Australia. The ANZECC 2000 guidelines also provide guidance on site specific assessment and recommend a risk-based approach for protecting aquatic ecosystems. The ANZECC 2000 criteria were calculated at four different levels of species protection, these being 80%, 90%, 95% and 99%. That is, they signify the percentage of species within an ecosystem to be protected. It should be noted that the criteria for 95% species protection have been adopted as the Groundwater Investigation Levels (GILs) outlined in the recently released NEPM 2013 guidelines.

In view of the extensive research that is necessary to derive the ANZECC criteria, high reliability criteria (ie those for which the toxicology research has been completed to the required level) are not available for all chemical species. In the absence of definitive criteria, the ANZECC guidelines outline moderate and low reliability criteria which have been derived using the application of a risk-based coefficient. That is, they are typically conservative as to account for data limitations.

In the absence of high reliability criteria, EPA has specified that the low and moderate reliability criteria should be used. In some cases however, in particular for petroleum hydrocarbon compounds, the low/moderate reliability criteria are impracticably conservative and are actually below the limits of laboratory reporting. In such instances, EPA has advised that the adopted ecosystem protection criteria may be set as the lowest possible laboratory detection limit that can be achieved with the analytical technique remaining NATA accredited.

The receiving body for groundwater that flows beneath the site is expected to be the upper Cooks River, which is located approximately 125m to the north of the site at its closet point Cooks River is effectively an engineered drainage channel for much of its length and therefore holds little ecological value. However, Cooks River becomes an open channel approximately 3.3 km down-gradient of the site and which discharges to Botany Bay after a distance of approximately 11.5 km. Due to the distance from Botany Bay's tidal influence, the trigger values for 95% species protection in fresh waters are considered to be the most appropriate and have been adopted for this investigation.

The ANZECC 2000 guidelines also provide criteria that are designed to be protective of human-health for primary and secondary contact recreation. Criteria for irrigation, aquaculture protection and stock water quality are also provided.

Australian Drinking Water Guidelines 2011

ADWG 2011 is to provide a framework for the appropriate management of drinking water supplies in the Australian context, and is designed to ensure safety at the point of use. The guidelines include criteria that are protective of human-health via a pathway of ingestion, however, they also include criteria that are protective of drinking water aesthetics based on colour, odour and taste. The ADWG 2011 criteria have also been adopted as GILs in the recently released NEPM 2013 guidelines.

Criteria for Built Structures Protection

The Australian Standards *AS 2159-2009 Piling – Design and Installation* and *AS 2870-2011 Residential Slabs and Footings* outline a range of 'exposure classification' criteria for aggressiveness (ie corrosion potential) to both concrete and steel based on the pH and sulfate and chloride concentrations in groundwater. They are not threshold levels which, if exceeded, are indicative of potential harm to built structures. Rather, they are to be used as a guide to assist in the appropriate selection of pile, slab and footings design parameters to ensure the longevity of built structures in the environment in which they are constructed.

12.2.1 Relevant Environmental Values at the Site

Whilst the Groundwater Guidelines state that all REVs listed above should be applied as part of a groundwater investigation, certain REVs may not be applicable in some cases where they would never be realized.

The site is located within an urban environment which is serviced by a reliable and high quality reticulated town water supply. In view of this, the groundwater that flows beneath the site is not likely to be used for aquaculture, agricultural or industrial purposes, nor is it likely to be used as a drinking water supply. Further, given that Cooks River comprises a concrete lined channel, and groundwater migrating off-site would not discharge directly to the channel; instead, it would flow along the backfill of the channel until the point where it becomes a natural open channel (approximately 3.3 km to the southeast of the site). However, the key receiving environments for groundwater migrating beneath the site, these being the Cooks River and eventually Botany Bay have ecological value which should be protected, and these environments could also be used for both contact-based recreation and fishing. Also, the site is proposed to be built on and occupied in the long term.

In view of the above, the REVs which are applicable at the site and have been appraised for this investigation include:

- Protection of the aquatic ecosystem in the key receiving surface water body (Cooks River);
- Protection of human-health via contact-based recreation (in relation to the receiving surface water bodies);
- Protection of human-health via an aquatic foods consumption exposure pathway;
- Potential impacts to human-health as a result of organic vapours being emitted from contaminated groundwater; and
- Preservation of the structural integrity of buildings or features constructed on the site.

In order the evaluate potential adverse impacts to the above REVs the ANZECC 2000 criteria for 95% species protection in fresh waters have been used, along with the ANZECC 2000 criteria for the protection of human-health in recreational waters and aquaculture. It should be noted that in the absence of criteria that are specifically protective of human-health via an aquatic foods consumption exposure pathway, the ANZECC 2000 aquaculture criteria have been used as a surrogate. Also, whilst not relevant at the site, the results have also been compared to the ADWG 2011 criteria as these are used as a trigger for notifiable contamination under the provisions of the *Contaminated Land Management Act 1997*.

13. ANALYTICAL RESULTS AND INTERPRETATION

The analytical results for the soil and groundwater samples are presented in the NATA endorsed laboratory reports included in Appendix H and are summarised in the Tables of Results attached to this report. The results exceeding the assessment criteria are highlighted in the tables accordingly.

13.1 Interpretation of Soil Sampling Results

The analytical results for the soil samples are presented in Table A, and an appraisal of the potential risks to human-health and the environment based on these results is provided below.

13.1.1 Evaluation of Potential Human-Health Risks

The results show that the concentrations of organic and inorganic species analysed for in the soil samples are low and well below the NEPM HIL/HSL Residential A criteria and the EPA Threshold Concentrations. Further, no asbestos fibres were detected in the soil samples. That is, the concentrations of chemical contaminants measured in the soil samples do not present a risk to human-health for a mixed commercial and medium-high density residential land use setting

13.1.2 Evaluation of Potential Environmental Impacts

The results also show that the concentrations of organic and inorganic species analysed for in the soil samples are low and below the NEPM EIL/ESL criteria, with the exception of the zinc concentration (232 mg/kg) measured in one soil samples, which is marginally above its EIL of 200 mg/kg. However, this zinc concentration is within the NEPM background ranges for Australian soils. That is, the soils on the site are not expected to present a risk to plant health or the environment generally.

13.2 Interpretation of Groundwater Sampling Results

The analytical results for the groundwater samples retrieved from the monitoring well are presented in Table B. The results for the various chemical species analysed for are discussed below.

13.2.1 Heavy Metals

The concentrations of heavy metals measured in the groundwater samples are generally low and below the assessment criteria. However, the concentrations of cadmium (0.5 ug/L), copper (24 ug/L), nickel (92 ug/L) and zinc (433 ug/L) exceed their ANZECC 2000 criteria for ecosystem protection in fresh waters of 0.2 ug/L, 1.4 ug/L, 11 ug/L and 8 ug/L respectively. In addition, the copper and zinc concentrations exceed their ANZECC 2000 criteria for aquaculture, and the nickel concentration is also above its ADWG criterion of 20 ug/L.

It is noted that the concentrations of these metals measured in the soils on the site are low and within the range of natural variability. Further, based on the results of the site history review performed for this investigation, no point sources that may produce heavy metals impacts have been identified apart from lead being associated with the UPSS, and the lead concentrations measured in the groundwater are low. Also, the monitoring well was positioned close to the up-gradient site boundary and the groundwater quality in this area is likely to be affected by groundwater migrating onto the site from the south. That is, the metals impacts that have been identified in the groundwater are expected to be representative of the background concentrations in the regional aquifer rather than on-site sources.

13.2.2 Monocyclic Aromatic Hydrocarbons

The concentrations of MAHs measured in the groundwater sample are all below the screening criteria adopted for this investigation. This shows that the site is not likely to be the source of any unacceptable MAH groundwater impacts.

13.2.3 Total Petroleum Hydrocarbons

The concentrations of TPH measured in the groundwater sample are below the screening criteria adopted for this investigation. This shows that the site is not likely to be the source of any acceptable TPH groundwater impacts.

13.3 Groundwater Exposure Pathways Analysis

A risk analysis for the potential impacts to the REVs for groundwater in the vicinity of the site is provided below.

Aquatic Ecosystems

The results of this investigation show that the groundwater beneath the site contains concentrations of cadmium, copper, nickel and zinc which are above the ANZECC 2000 criteria for ecosystem protection in fresh water environments. All other contaminants have been measured to be below these criteria.

As outlined in Section 13.3.1 above, these groundwater impacts are expected to be representative of the background concentrations in the regional aquifer rather than being due to on-site sources. Also, the concentrations of copper, nickel and zinc measured in the groundwater are generally low and would not be expected to have a material impact on the quality of water in the closest down-gradient receiving environment, especially since the concentrations of these metals would attenuate substantially between the site and the point where groundwater would discharge to the Cooks River open channel some 3 km to the east.

That is, the metals concentrations in the groundwater are not expected to present an unacceptable risk to the ecosystems within down-gradient receiving environments regardless of their source.

Human Uses

The REVs for human uses that are applicable at the site include contact-based recreation and the human consumption of aquatic foods.

As outlined in Sections 13.3.1 and above, whilst concentrations of copper, nickel and zinc which exceed the ANZECC 2000 aquaculture criteria and/or the ADWG 2011 criteria have been measured in the groundwater beneath the site, these metals are likely to be representative of the background concentrations in the regional aquifer and are not likely to have a material impact on the quality of water within key down-gradient receiving environments. That is, the site is not expected to be the source of any heavy metals groundwater impacts which present a risk to human health in down-gradient receiving environments as a result of exposure pathways involving the consumption of aquatic foods sourced from, or contact-based recreation in the lower Cooks River and Botany Bay further down-stream.

Human Health in Non-Use Scenarios

Human-health impacts from non-use scenarios may include vapour impacts from a contaminant plume. However, no phase separated hydrocarbons were identified on the groundwater during sampling and the concentrations of volatile hydrocarbon contaminants measured in the groundwater are very low and below levels that would not present a potential vapour risk. Therefore, no adverse impacts to human-health resulting from the groundwater in non-use scenarios would be expected.

Buildings and Structures

The concentrations of chemical contaminants measured in the groundwater beneath the site would not present a significant risk to built structures. Further, the pH of the groundwater that was measured during the purging of the monitoring wells (shown in Table 10.1) is not significantly acidic and would not present an unacceptable corrosion risk to steel or concrete.

13.4 Potential for Off-Site Migration of Contamination

In view of the low concentrations of chemical contaminants measured in the soils on the site, off-site migration of contaminants via surface runoff or wind action is unlikely to have occurred. Further, as outlined in Section 13.3 above, the off-site migration of groundwater is not likely to present an actual unacceptable risk to down-gradient receiving environments to the extent that the human-health or the environment would be put at risk.

13.5 Duty to Report Site Contamination

Under the provisions of the *Contaminated Land Management Act 1997* (CLM Act), a site owner or occupant has a duty to notify EPA of any significant contamination that has the potential to cause human-health or environmental impacts. The requirements for reporting contamination are outlined in EPA's *Guidelines on the Duty to Report Contamination Under the Contaminated Land Management Act 1997*, which became effective on 1 December 2009. This guideline outlines the specific triggers which need to be considered for notifiable contamination under the CLM Act.

For soil, the notification thresholds are the SILs, which are outlined in EPA's *Guidelines for the NSW Site Auditor Scheme (2nd Edition*). Where contaminants exceed their SIL criteria by more than 2.5 times in any one sample or where the average concentrations of contaminants in soil exceed the applicable SILs, **and** where exposure pathways exist, EPA must be notified. Further, it should be noted that the Duty to Report Guidelines do not define notification thresholds for all contaminants. EPA has advised that where no criteria are listed, the need to submit a notification (or otherwise) should be based on advice provided by an environmental consultant.

For groundwater, EPA must be notified if elevated concentrations of contaminants are a) identified to be above criteria which are protective of drinking water (adopted from the *Australian Drinking Water Guidelines 6, 2011*) and b) due to sources on a particular site rather than being regional or background concentrations. Where impacted groundwater is likely to be discharging into a surface water body within 500 m of the contaminant source, criteria that are protective of aquatic ecosystems in both fresh and marine waters (outlined in the *ANZECC 2000 Guidelines on Fresh and Marine Water Quality*) also apply. The threshold criteria for notification in relation to groundwater impacts are provided in Appendices A and B of the Duty to Report Guidelines.

In addition, it should be noted that in view of the release of the 2013 NEPM (which provides the most current applicable assessment criteria), the Duty to Report Guidelines are currently being reviewed. However, EPA has advised that the current guideline remains relevant and should still be used in the intermediary period until the revised guidelines have been released.

The results of the soil sampling performed for this investigation show that the concentrations of chemical contaminants measured in the soil samples retrieved from the site are low and below their respective SIL (Column 1) criteria for a residential land use setting, this being the proposed use. That is, there would be no need to notify EPA due to soil impacts based on currently available data.

With regard to groundwater, the site is located well in excess of 500 m from the key receiving environments, in which case notification is not required with respect to contaminants exceeding the ANZECC 2000 ecosystem protection criteria. Further, whilst the nickel concentrations measured is above the ADWG criteria, it is most likely that the nickel impacts are representative of regional background levels rather than specifically being a result of on-site sources. In view of this, there would be no need to submit a notification with respect to the nickel impacted groundwater based on currently available data.

13.6 Assessment Outcomes

Based on the results of this investigation, the site is considered to be suitable for the proposed mixed commercial and medium-high density residential redevelopment. However, a UPSS is located in the south-western portion of the site and remains in use. Whilst the results of the groundwater sampling performed for this investigation suggest that this facility has not leaked significantly, the UPSS should be removed at the time it becomes disused, and the excavated area should also be validated to determine if the surrounding soil is impacted with petroleum hydrocarbons. Further, if any significant leakage is confirmed to have occurred a second phase groundwater investigation should also be undertaken.

14. EVALUATION OF QUALITY ASSURANCE

14.1 Field Duplicate Sample Results

The results of the field intra and inter-laboratory duplicate sample analyses for soils are compared to those of the corresponding primary samples in Table C.

The results for the soil duplicate samples show that the variations between the primary and duplicate sample concentrations exceed the allowable Relative Percentage Difference (RPD) criteria of 50% for inorganic species and 70% for organic analytes in only four of the 36 comparable data sets, which is an acceptable rate of correlation. The discrepancies encountered are expected to be due to the heterogeneous distribution of heavy metals within fill material. Further, the concentrations of contaminants in both the primary and duplicate samples are below the assessment criteria which have been adopted for this investigation. That is, the RPD discrepancies do not affect the outcome of the investigation.

14.2 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.

14.3 Procedure Based Quality Control

An appraisal of the key procedure-based quality control aspects of the investigation are summarized in Table 14.1 below.

Table 14.1 Appraisal of Procedure-Based Quality Control

Item	Compliance	Reference/Comments
Appropriate sampling methods adopted?	Yes	Refer to Sections 10.1 & 10.2
Appropriate sample handling and transportation procedures implemented?	Yes	Refer to Sections 10.1 & 10.2 and COC documentation in Appendix G
Samples analysed within recommended laboratory holding times?	Yes	Refer to COC documentation in Appendix G and laboratory reports in Appendix H
NATA accredited laboratory testing methods used?	Yes	Refer to laboratory reports in Appendix H
Appropriate purging of groundwater wells prior to sampling?	Yes	Refer to purging records sheets in Appendix F

15. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this investigation the following conclusions and recommendations are made:

- The site appears to have been used for as a golf course since at least the 1950s, and is the only activity known to have occurred on site. Further, one small UPSS that is used to store petrol is located in the western portion of the site and appears to have been installed around 1960.
- The results of the soil sampling program performed for this investigation show that the concentrations of chemical contaminants in the soils across the site are low and below criteria that are protective of human-health and the environment for a mixed commercial and medium-high density residential land use setting.
- The results of the groundwater sampling performed for this investigation show that the UPSS which is located on the site is not expected to have leaked significantly. Elevated concentrations of the heavy metals cadmium, copper, nickel and zinc were measured in the monitoring well, however, the concentrations of these metals are generally low and are expected to representative of the background concentrations in the regional aquifer rather than on-site sources. That is, the site is not expected to be the source of groundwater impacts that present an unacceptable risk to human-health or the environment.
- Based on the results of this investigation, the site is considered to be suitable for the proposed mixed commercial and medium-high density residential redevelopment. However, a UPSS is located on the site and remains in use. This facility should be removed at the time it becomes disused, and the excavated area should also be validated to determine if the surrounding soil is impacted with petroleum hydrocarbons. If any significant leakage is confirmed to have occurred then further groundwater sampling should also be performed.

16. LIMITATIONS

SMEC Testing Services Pty Limited has performed its services for this project in accordance with its current professional standards. Laboratory analyses were undertaken as part of this investigation by Australian Laboratory Services, who are NATA accredited for the analyses performed.

Our opinions outlined in this report are based purely on the results of soil and groundwater sampling undertaken by SMEC Testing Services Pty Ltd for this investigation. When assessing the extent of contamination across a site from a soil or groundwater sampling program there is the possibility that variations may occur between sample locations and the actual presence of contaminated material at the site may differ from that referred to herein, since no sampling program, no matter how comprehensive, can reveal all anomalies and hot spots that may be present.

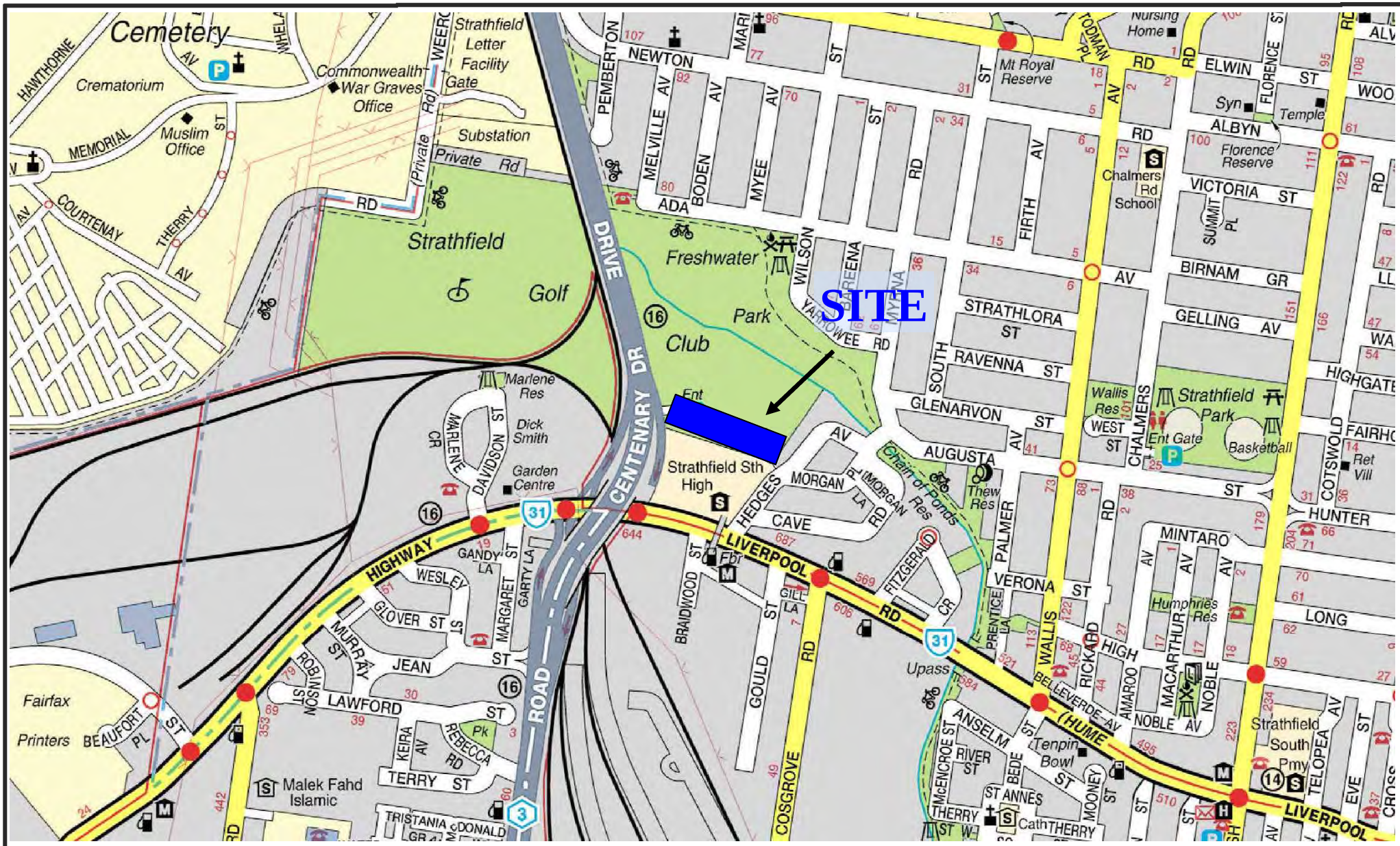
The data collected has been used to form an opinion about site contamination with regard to a mixed land use setting. If the nature of the proposed development changes, the conclusions given in this report may need to be revised. Also, regulatory evaluation criteria are constantly changing and as a consequence, concentrations of contaminants presently considered low may, in the future, fall under different regulatory standards that may alter the outcome of this investigation. Opinions and judgments expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

This document and the information herein have been prepared solely for the use of Strathfield Golf Club for the purposes nominated in this report. No person or organization other than Strathfield Golf Club is entitled to rely on any part of the report without the prior written consent of SMEC Testing Services Pty Ltd. Any third party relying on this report shall have no legal recourse against SMEC Testing Services Pty Ltd or its parent organizations or subsidiaries and shall indemnify and defend them from all and against all claims arising out of, or in conjunction with such use or reliance.

David Yonge (BSc, MSc)
Environmental Manager,
SMEC Testing Services Pty Limited

Natasha Ryan (BSc)
Environmental Scientist,
SMEC Testing Services Pty Limited

FIGURES



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SMEC TESTING SERVICES Pty. Ltd.	Scale: Unknown	Date: May 2014
Client: STRATHFIELD GOLF CLUB		
PRELIMINARY SITE INVESTIGATION **84 CENTENARY DRIVE, STRATHFIELD** **SITE LOCATION**	Project No. 19623/4145C	
	Drawing No: 14/0671/1	

N

Borehole location

Monitoring well location

Site Boundary

Underground Petroleum tank

SMEC TESTING SERVICES Pty. Ltd.	Scale: Unknown	Date: April 2014
Client: STRATHFIELD GOLF CLUB		
PRELIMINARY SITE INVESTIGATION **84 CENTENARY DRIVE, STRATHFIELD** **BOREHOLE LOCATIONS**	Project No. 19623/4145C	
	Drawing No: 14/0671/2	

TABLES OF RESULTS

Table A Analytical Results for Soil Samples

Analytes	Borehole No.	BH1	BH1	BH2	BH2	BH3	BH4	BH4	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH8	BH9	BH9	BH10	BH10	NEPM Background Ranges	NEPM 2013 HIL/HSL Residential A Criteria	NEPM EILs/ESLs for Urban Residential	NSW EPA Threshold Concentrations
	Sample No.	S1	S2	S3	S4	S5	S7	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S22	S23	S24				
Metals																								
Arsenic		15	12	<5	10	6	24	5	9	9	16	10	<5	8	12	<5	24	8	11	9	1-50	100	100 (f)	
Cadmium		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	20	3 (g)	
Chromium		25	22	6	21	22	40	12	10	46	15	27	6	15	11	16	14	21	16	25	5-1 000	100 (b)	400 (g),(h)	
Copper		17	13	23	<5	13	53	<5	18	<5	10	<5	5	<5	9	<5	10	<5	21	<5	2-100	6,000	100 (g)	
Lead		17	21	7	18	14	80	20	19	10	30	13	15	15	24	9	45	12	61	11	2-200	300	1100 (f)	
Mercury		<0.1	<0.1	0.3	<0.1	<0.1	1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.5	<0.1	0.001-0.1 (a)	40 (c)	1 (g),(c)	
Nickel		9	<2	24	<2	9	21	<2	15	3	2	<2	2	2	2	2	<2	<2	12	<2	5-500	400	60 (g)	
Zinc		32	14	22	7	23	**232**	<5	65	<5	27	<5	20	16	20	<5	23	8	80	<5	10-300	7,400	200 (g)	
Monocyclic Aromatic Hydrocarbons (MAHs)																								
Benzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.05-1 (a)	0.7 (d)	65 (i)	1
Ethylbenzene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			125 (i)	3.1
Toluene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1-1 (a)	480 (d)	105 (i)	1.4
Xylenes		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		110 (d)	45 (i)	14
Napthalene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		5 (d)	178 (f)	
Total MAHs above detection limits		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
Total Petroleum Hydrocarbons (TPHs)																								
Total C_6-C_9		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10				65
F1 C_6-C_{10}[1]		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		50 (d)	180 (i)	
F2 C_{10}-C_{16}[1]		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50		280 (d)	120 (i)	
F3 >C_{16}-C_{34}		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100			1300 (i)	
F4 >C_{34}-C_{40}		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100			5600 (i)	
Total C_{10}-C_{36}		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50				1000
Polycyclic Aromatic Hydrocarbons (PAHs)																								
Carcinogenic PAHs[2]		0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		3		
Total PAHs above detection limits		5.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.95-5 (a)	300		
Organochlorine Pesticides (OCPs)																								
Total OCPs above detection limits		-	-	ND	-	-	ND	-	-	-	ND	-	-	-	ND	-	-	-	-	-				
Organophosphorus Pesticides (OPPs)																								
Total OPPs above detection limits		-	-	ND	-	-	ND	-	-	-	ND	-	-	-	ND	-	-	-	-	-				
Polychlorinated Biphenyls (PCBs)																								
Total PCBs above detection limits		-	-	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	<0.1	-	-	-	-	-	0.02-0.1 (a)	1		
Total Cyanide		-	-	<1	-	-	<1	-	-	-	-	-	-	-	1	-	-	-	-	-		250 (e)		
Asbestos		-	-	ND	-	-	ND	-	-	-	ND	-	-	-	ND	-	-	-	ND	-				

Notes : Results expressed as mg/kg unless otherwise indicated

ND = No individual species detected above laboratory detection limits.

[1] Calculated in accordance with Table 1A(3) of NEPM 2013

[2] Combined carcinogenic PAHs with relative potency to benzo(a)pyrene

Results shaded green exceed the NSW EPA threshold concentrations for a sensitive land use.

Results shaded blue exceed the NEPM EIL/ESL or eqivalent criteria for an urban residential land use setting

Results shaded red exceed the NEPM 2013 HIL/HSL Residential A criteria

(a) ANZECC background ranges used where no NEPM criteria available.

(b) Criterion for chromium (VI).

(c) Criterion for inorganic mercury.

(d) NEPM 2013 HSL criterion for vapour intrusion, 0-1m depth in clay soils

(e) Criterion for free cyanide

(f) NEPM 2013 generic EIL criterion

(g) 1999 NEPM EIL/NSW EPA PIL

(h) Criterion for chromium (III).

(i) NEPM 2013 ESL criterion for fine texture grade soils

SMEC Testing Services

Table B Analytical Results for Groundwater Samples

Analytes	Sample No. / Date Sampled	GW1 25/2/2014	ANZECC 2000 Criteria for 95% Species Protection in Fresh Waters*	ANZECC 2000 Recreational Water Health Criteria*	ANZECC 2000 Aquaculture Criteria*	ADWG 2011 Drinking Water Criteria#
Metals						
Arsenic		1	13 (a)	50	<50	10
Cadmium		0.5	0.2	5	<5	2
Chromium		<1	3.3 (b),(d)	50	<20	50
Copper		24	1.4	1000	<5	2000
Lead		3	3.4	50	<7	10
Mercury		<0.1	0.6 (c)	1	<1	1
Nickel		92	11	100	<100	20
Zinc		433	8	5000	<5	
Monocyclic Aromatic Hydrocarbons (MAHs)						
Benzene		<1	950	10	<300 (f)	1
Ethylbenzene		<2	80 (d)		<300 (f)	300
Toluene		<2	180 (d)		<300 (f)	800
Xylenes		<2	75 (d),(e)		<300 (f)	600 (g)
Napthalene		<5	16			
Total Petroleum Hydrocarbons (TPHs)						
Total C_6-C_9		<20	7 (d)		<300 (f)	
Total C_{10}-C_{36}		<50	7 (d)		<300 (f)	
Polycyclic Aromatic Hydrocarbons (PAHs)						
Total PAHs		ND				

Notes : Results expressed as µg/L unless indicated otherwise.

ND = No individual species was detected above the laboratory detection limits.

* ANZECC, ARMCANZ *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000* (ANZECC

NHMRC/NRMMC, *National Water Quality Management Strategy, Australian Drinking Water Guidelines 6, 2011*

Results that have been shaded red exceed the ANZECC 2000 criteria for 95% species protection for fresh waters

Results that have been shaded green exceed the ANZECC 2000 criteria for recreational water

Results that have been shaded yellow exceed the ANZECC 2000 criteria for aquaculture

Results shaded dark blue exceed the health-based criteria for drinking water outlined in the ADWG 2011

Results shaded light blue exceed the ANZECC 2000 criteria for ecosystem protection & aquaculture and the ADWG criteria

(a) Criterion for As IV

(b) Criterion for Cr III

(c) Criterion for inorganic mercury

(d) ANZECC 2000 low reliability trigger

(e) Criterion for m-xylene

(f) Criterion for oils and greases (including petrochemicals) in fresh waters

(g) Criterion for total xylenes

SMEC Testing Services

Table C Results of Quality Control - Intra Laboratory and Inter Laboratory Duplicate Soil Samples

Analyte	Sample Numbers					
	S7	S8[1]	RPD (%)	S7	S9[2]	RPD (%)
Metals						
Arsenic	24	33	32	24	26	8
Cadmium	<1	<1	<70	<1	<1	<70
Chromium	40	15	**91**	40	18	**76**
Copper	53	30	**55**	53	49	8
Lead	80	46	**54**	80	82	2
Mercury	1	1.1	10	1	1.3	26
Nickel	21	14	40	21	*22*	5
Zinc	232	184	23	232	273	16
Monocyclic Aromatic Hydrocarbons (MAHs)						
Benzene	<0.2	<0.2	<70	<0.2	<0.2	<70
Ethylbenzene	<0.5	<0.5	<70	<0.5	<0.5	<70
Toluene	<0.5	<0.5	<70	<0.5	<0.5	<70
Xylenes	<1.0	<1.0	<70	<1.0	<1.0	<70
Napthalene	<1	<1	<70	<1	<1	<70
Total Petroleum Hydrocarbons (TPHs)						
Total C_6-C_9	<10	<10	<70	<10	<10	<70
F1 C_6-C_{10} [+]	<10	<10	<70	<10	<10	<70
F2 C_{10}-C_{16} [+]	<50	<50	<70	<50	<50	<70
F3 >C_{16}-C_{34}	<100	<100	<70	<100	<100	<70
F4 >C_{34}-C_{40}	<100	<100	<70	<100	<100	<70

Note: Results expressed as mg/kg dry weight.

[1] Denotes intra-laboratory duplicate sample analysed by primary laboratory (ALS Sydney)

[2] Denotes inter-laboratory duplicate sample analysed by secondary laboratory (ALS Brisbane)

Italic Laboratory limit of reporting used

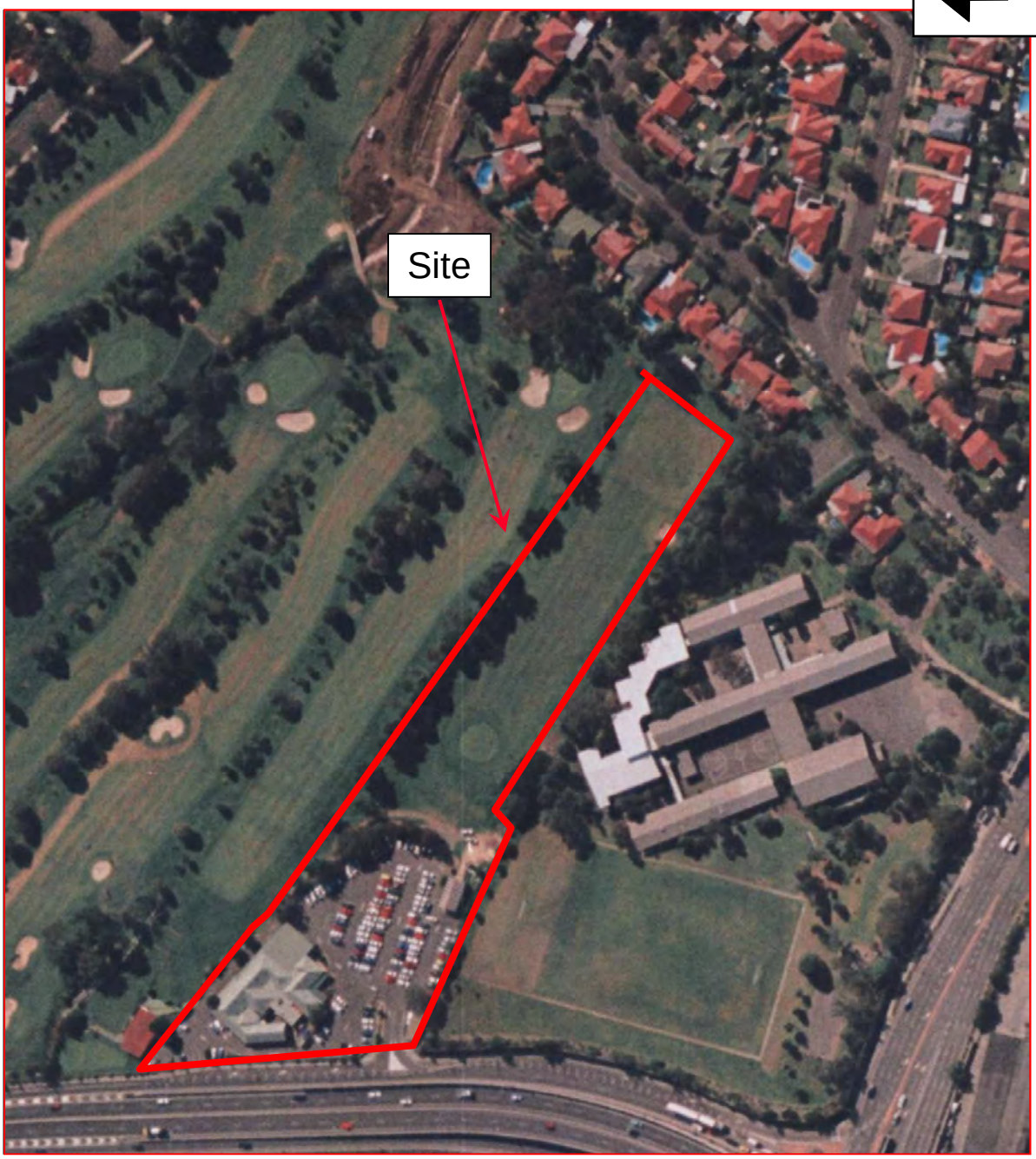
RPDs that have been shaded exceed the acceptance criteria

APPENDIX A

AERIAL PHOTOGRAPHY

Source: Department of Lands

2005 Aerial Photograph Showing the Site and its Surrounds



Source: Department of Lands

2002 Aerial Photograph Showing the Site and its Surrounds

Source: Department of Lands

1994 Aerial Photograph Showing the Site and its Surrounds

Source: Department of Lands

1986 Aerial Photograph Showing the Site and its Surrounds

Source: Department of Lands

1970 Aerial Photograph Showing the Site and its Surrounds

Source: Department of Lands

1961 Aerial Photograph Showing the Site and its Surrounds

Source: Department of Lands

1930 Aerial Photograph Showing the Site and its Surrounds

APPENDIX B

HISTORICAL LAND TITLES INFORMATION

(C.)

New South Wales.

Partially Cancelled 71123

[CERTIFICATE OF TITLE.]

(Nos of Transfers)
(A 77575 and A 79624)

24 Reg Gen 30/10/1930 See papers c 11635

REGISTER BOOK.

VOL. 2450 FOLIO 129

St 10

CANCELLED

(No of Application 14502)

(Reference to last Certificate Volume 1862 Folio 183)

Chief Commissioner for Railways and Tramways

Transferee as to part under Instrument of Transfer from Robert William Fozzard No A 79624 and Transferee as to the other part under Instrument of Transfer from Thomas ~~Harvey~~ Farwey Browne No A 77575 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 Strathfield Parish of Liberty Plains and County of Cumberland containing Sixty four acres two roods thirteen and one half perches or thereabouts as shown on the plan hereon and therein edged red, being also shown as to part on plan annexed to the said Instrument of Transfer No A 77575 and being part of the Bark Huts Estate and also part of Five hundred acres (Portion 56 Parish) delineated in the Public Map of the said Parish deposited in the Department of Lands originally granted to William Roberts by Crown Grant dated the Twentieth day of June One thousand eight hundred and sixteen

In Witness whereof I have hereunto signed my name and affixed my Seal this twenty seventh day of February One thousand nine hundred and fourteen

Signed the 27th day of February 1914
in the presence of

Deputy Registrar General

Notification referred to

REGISTRAR GENERAL NEW SOUTH WALES

No. B291944 Resumption of land for Public Road. Notice in Government Gazette dated 19th June 1925 Folio 2684 whereby and by operation of the Public Roads Act of 1902 the road shown in the plan catalogued R 15791 1603 in the Department of Lands and colored pink on the plan hereon was declared to be a Public Road. Produced 30th ~~June~~ November 1925 and entered 8th December 1925 at 2 o'clock in the after noon.

REGISTRAR GENERAL.

REGISTRAR GENERAL NEW SOUTH WALES

No. B387638 Resumption of land for Public Road. Notice in Government Gazette dated 23rd April 1926 Folio 1844 whereby and by operation of the Public Roads Act of 1902 the road shown in the plan catalogued R 16206 1603 in the Department of Lands and colored pink on the plan hereon was declared to be a Public Road. Produced 25th July 1926 and entered 21st August 1926 at 12 o'clock in ~~the~~ noon.

REGISTRAR GENERAL.

REGISTRAR GENERAL NEW SOUTH WALES

No. B 943140 Pursuant to Section 14 of the Real Property (Amendment) Act 1921 Railway Commissioners for New South Wales are now registered as Proprietors of an estate in fee simple in the land within described excluding thereout the roads shown by pink color in the plan hereon

Produced 21st February 1930 and entered 28th March 1930 at 11 o'clock in the fore noon.

REGISTRAR GENERAL

REGISTRAR GENERAL NEW SOUTH WALES

No C11635 TRANSFER dated 4th September 1930 from the said Railway Commissioners for New South Wales to The Council of the Municipality of Strathfield Subject to Covenant and Restrictive easement of part of the land within described

Produced 11th September 1930 and entered 8th October 1930 at 10 o'clock in the fore noon.

As to land in this transfer this ~~certificate~~ is cancelled and new Certificate issued Vol 4443 Fol 73

REGISTRAR GENERAL.

REGISTRAR GENERAL NEW SOUTH WALES

PARTIALLY CANCELLED Certificate of Title delivered pursuant to Section 50 of the Real Property Act 1900. Vide papers c 11635

REGISTRAR GENERAL.

REGISTRAR GENERAL NEW SOUTH WALES

No C 274553. Caveat dated 17th August 1934 as regards part Produced 17th August 1934 and entered 31st August 1934 at 10 o'clock in the forenoon.

Registrar General

REGISTRAR GENERAL NEW SOUTH WALES

No C 274748. Caveat dated 17th August 1934 as regards ~~part~~ Produced 17th August 1934 and entered 31st August 1934 at 10 o'clock in the forenoon.

Registrar General

REGISTRAR GENERAL NEW SOUTH WALES

No C452574 Caveat dated 10th July 1936
Produced 10th July 1936 and entered 30th July 1936 at 10 o'clock in the forenoon.
As regards part.
Roy W Willis
Registrar General.

REGISTRAR GENERAL N.S.W. SOUTH WALES

No. D824405 Application under Section 14 of the Real Property (Amendment) Act 1921. The Commissioners for Railways
is registered as proprietor of the residue of the land within described excluding thereout the roads shown by pink colour on the plan hereon
Produced 21st November 1941 and entered 20th December 1941.
at ___ mts. past 12 o'clock in the ___ noon
Roy W Willis
REGISTRAR GENERAL

No. D181152 WITHDRAWAL of the within Caveat
No. C 274748 dated 29th December 1942
Produced 6th April 1943 and entered
6th April 1943
at 12 o'clock in the ___ noon.
Roy W Willis
REGISTRAR GENERAL.

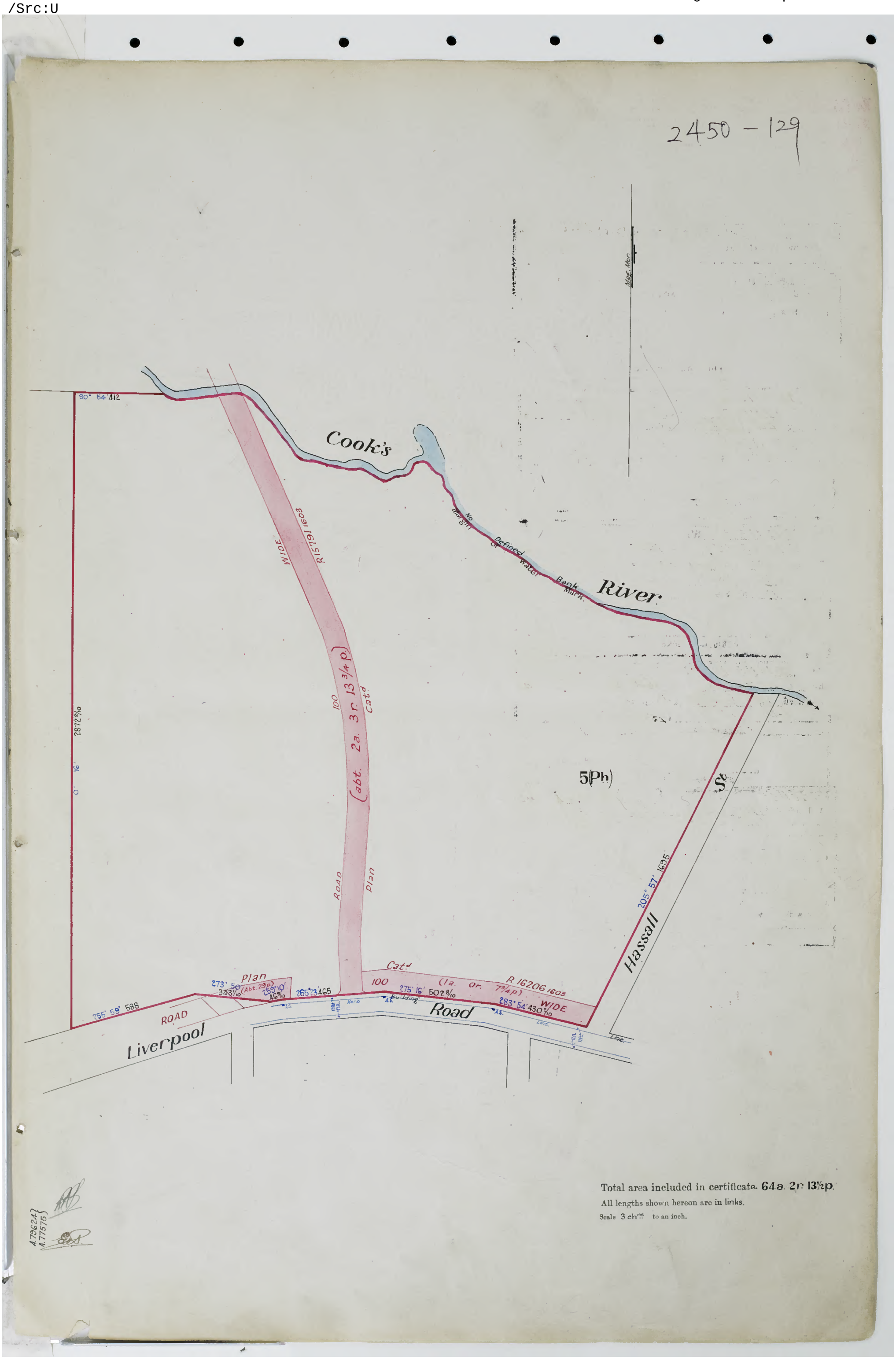
No. D181153 WITHDRAWAL of the within Caveat
No. C452574 dated 16th December 1942
Produced 27th January 1943 and entered
6th April 1943
at 12 o'clock in the ___ noon.
Roy W Willis
REGISTRAR GENERAL.

No. D181154 WITHDRAWAL of the within Caveat
No. C274553 dated 16th December 1942
Produced 27th January 1943 and entered
6th April 1943
at 12 o'clock in the ___ noon.
Roy W Willis
REGISTRAR GENERAL.

No. D181155 TRANSFER dated 9th March 1942
from the said The Commissioners for Railways
to Strathfield Golf Club (reserving easement)
of part of the land within described
Produced 27th January 1943 and entered 6th April 1943
at 12 o'clock in the ___ noon.
As to land in this transfer this Certificate is cancelled and new Certificate issued Vol. 5372 Fol. 222
Roy W Willis
REGISTRAR GENERAL.

This Deed is Cancelled and Certificate of Title issued
Vol. 5371 Fol 246 for residue (ex roads)
Roy W Willis
Registrar General.
OD 165843

2450 - 129



Total area included in certificate. 64a. 2r. 13½p.

All lengths shown hereon are in links.

Scale 3 chs to an inch.

201

Appn. No. 14502

Reference to last certificate

Vol. 2450 Fol. 129

St 2795

New South Wales.

[CERTIFICATE OF TITLE]

REGISTER BOOK.
Vol. 5372 Fol. 222

CANCELLED [W]
ON ISSUE OF NEW FOLIO Auto Consol 5372-222

STRATHFIELD GOLF CLUB, Transferee under Instrument of Transfer No.D181155 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 Those pieces of land situated in the Municipality of Strathfield Parish of Liberty Plains, and County of Cumberland containing Nineteen acres three roods twenty two and one quarter perches or thereabouts as shown in the plan hereon and therein edged red and also shown in plans marked A, B and C annexed to the said Instrument of Transfer No.D181155 being parts of 500 acres (Portion 5 of Parish) originally granted to William Roberts by Crown Grant dated the 20th day of June 1816.

In witness whereof I have hereunto signed my name and affixed my Seal, this Fourteenth day of April, 1943.

Signed in the presence of W.P. Friend

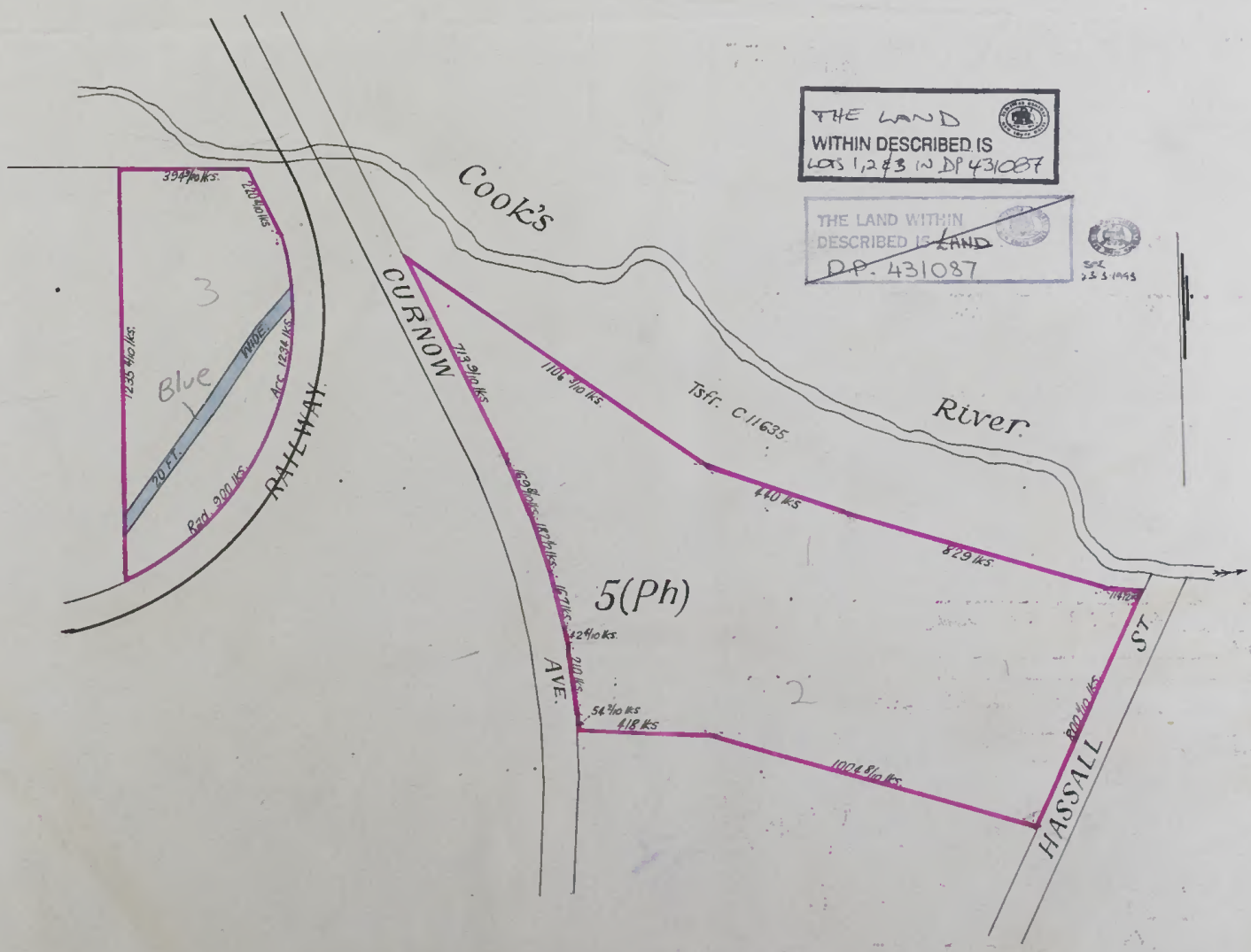
Registrar General.

REGISTRAR GENERAL NEW SOUTH WALES

THE LAND WITHIN DESCRIBED IS LOTS 1,2&3 IN DP 431087

THE LAND WITHIN DESCRIBED IS ~~LAND~~ DP. 431087

SRC 23 3 1993



Total Area:- 19a 3r 22¼p

Scale:- 4 Chains to one inch.

D 181155.

NOTIFICATION/

D181156

NOTIFICATION REFERRED TO

Easement for Transmission Line over the piece of land 20 feet wide colored blue in the plan hereon as reserved by the above mentioned Instrument of Transfer No.D181155.

Registrar General.

No. D181156 MORIGAGE dated 5th November 1942,
from the said Strathfield Golf Club
to RURAL BANK OF NEW SOUTH WALES
27th January 1943,
Produced and entered 5th May 1943,
at 12 o'clock in the noon.

REGISTRAR GENERAL

No. P441323 DISCHARGE of within mortgage
No. P 181156 dated 11th October 1945
Produced and entered 7th December 1946
at 39 mts to 1st o'clock in the after noon.

J. Wells
REGISTRAR GENERAL.

No. F42078 MORTGAGE dated 25th June 1949
from the said Strathfield Golf Club to Commonwealth Bank of Australia

Produced and entered 13th July 1949
at 9 mts to 10 o'clock in the fore noon.

J. Wells
REGISTRAR GENERAL.

No. G32281 DISCHARGE of within mortgage
F42078 dated 19th January 1954

Produced 10th March 1954 and entered 10th March 1954
at 33 mts to 10 o'clock in the fore noon.

J. Wells
REGISTRAR GENERAL.

No. G32282 MORTGAGE dated 26th February 1954
from the said Strathfield Golf Club to Bank of New South Wales

Produced 10th March 1954 and entered 10th March 1954
at 33 mts to 10 o'clock in the fore noon.

J. Wells
REGISTRAR GENERAL.

No. J830666 Transfer and Grant dated 8th October 1964
to Her Most Gracious Majesty Queen Elizabeth the Second
for Easement for Drainage affecting the piece of land
shown as site of Imposed easement 6 feet wide in
Deposited Plan No. 511996 (with consent of mortgage)
Entered 4th January, 1965

Registrar General

COMPUTER FOLIO NO FURTHER
DEALINGS TO BE REGISTERED.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: AUTO CONSOL 5372-222

SEARCH DATE	TIME	EDITION NO	DATE
31/3/2014	10:52 AM	3	10/6/2008

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
LOCAL GOVERNMENT AREA STRATHFIELD
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

STRATHFIELD GOLF CLUB (T D181155)

SECOND SCHEDULE (5 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 D181155 EASEMENT FOR TRANSMISSION LINE 6.096 WIDE AFFECTING THE PART OF LOT 3 IN DP431087 ABOVE DESCRIBED SHOWN SO BURDENED IN DP431087
3 J830666 EASEMENT FOR DRAINAGE 1.83 WIDE AFFECTING THE PART OF LOT 1 IN DP854298 ABOVE DESCRIBED SHOWN SO BURDENED IN DP511996
4 AC788836 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED
5 AD821326 POSITIVE COVENANT AS REGARDS 2/854298

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS	TITLE DIAGRAM
LOT 3 IN DP431087	DP431087
LOTS 1-2 IN DP854298	DP854298.

*** END OF SEARCH ***

PRINTED ON 31/3/2014

55275 9.47

No. 1949/1558

[LAND GRANT]

State of New South Wales

NEW SOUTH WALES
FIVE SHILLINGS STAMP DUTY SYDNEY, N.S.W.

N.S.W. DEPARTMENT 2-11.1950A OF STAMP DUTY

REGISTER BOOK VOL. 6201 FOL. 163

GRANT UPON PURCHASE OF UNNECESSARY ROAD

(UNDER THE PUBLIC ROADS ACT 1902)

CANCELLED ON ISSUE OF NEW FOLIO 1/130917

GEORGE VI. by the Grace of God, of Great Britain, Ireland, and the British Dominions beyond the Seas, King, Defender of the Faith:-
TO ALL to whom these Presents shall come, Greeting:-

Whereas a certain road comprising the piece or parcel of land hereinafter described *was* in accordance with the provisions of the Public Roads Act 1902 relating to Unnecessary Roads in Our State of New South Wales duly closed and *the Strathfield Golf Club hereinafter called the said Club* ~~in Our said State~~ being the owner of land adjoining thereto has agreed to have the said land granted to *it* upon payment of the sum of *One hundred and twenty pounds* Sterling being the value thereof as determined by the Local Land Board **Now Know Ye** That in consideration of the said sum for and on Our behalf well and truly paid into the Treasury of Our said State before these Presents are issued and of all and singular the premises We for Us Our Heirs and Successors Do HEREBY GRANT unto the said *Club and its* ~~Heirs and~~ Assigns Subject to the Reservations and Exceptions hereinafter contained ALL THAT Piece or Parcel of Land in Our said State containing by Admeasurement *three roods twelve perches and three quarters of a perch* be the same more or less situated in the County of *Cumberland* Parish of *Liberty Plains at Strathfield*

Scale 2 chains to an inch

Being the closed part of the road one chain wide known as Hassall Street provided in a private subdivision of part of portion five of five hundred acres Parishes of Bankstown and Liberty Plains separating the land comprised in Certificates of Title Volume 5372 Folio 222 and Volume 5340 Folio 137 from the land comprised in Certificates of Title Volume 948 Folio 94 and Volume 1843 Folio 210 and extending from the South Easterly prolongation of the most Easterly South Western boundary of the land comprised in Certificate of Title Volume 5372 Folio 222 aforesaid in a North Easterly direction to the right bank of the Cooks River

THE LAND WITHIN DESCRIBED IS LOT 1 - DP 130917

As per Plan in the margin hereof With all the Rights and Appurtenances whatsoever thereto belonging **To hold** unto the said *Club and its* ~~Heirs and~~ Assigns for ever **Provided Nevertheless** AND WE DO HEREBY RESERVE AND EXCEPT unto Us Our Heirs and Successors all minerals which the said land contains with full power and authority for Us Our Heirs and Successors and such person or persons as shall from time to time be authorised by Us or Them to enter upon the said land and to search for mine dig and remove the said minerals **And also** all such parts and so much of the said land as may hereafter be required for public ways viaducts canals railways tramways dams sewers or drains in over and through the same to be set out by Our Governor for the time-being of Our said State or some person by him authorised in that respect **And also** all sand clay stone gravel and indigenous timber and all other materials the natural produce of the said land which may be required at any time hereafter for the construction and repair of any public ways bridges or canals or for naval purposes or railways and tramways or any fences embankments viaducts dams sewers or drains necessary for the same together with the right of taking and removing all such materials by such person or persons as may be authorised in that behalf by the Governor aforesaid **Provided Lastly** AND WE DO HEREBY RESERVE for Us Our Heirs and Successors and for Our Governor as aforesaid by such person or persons as shall be by Us Them or him authorised in that behalf full power to make and conduct through in under upon or over the said land or any portion thereof all public ways viaducts railways tramways canals and all common or public drains and sewers which may be deemed expedient And the right of full and free ingress egress and regress into out of and upon the said land for the several purposes aforesaid or any of them **In Testimony Whereof** We have caused this Our Grant to be Sealed with the Seal of Our said State

Witness Our Trusty and Well-beloved SIR JOHN NORTHCOTT, Knight Commander of Our Most Distinguished Order of Saint Michael and Saint George, Companion of Our Most Honourable Order of the Bath, Member of Our Royal Victorian Order, Lieutenant-General on the Retired List of Our Australian Military Forces, Governor of Our State of New South Wales and its Dependencies in the Commonwealth of Australia, at Sydney in Our said State, this *twelfth* day of *October* in the fourteenth year of Our Reign, and in the year of Our Lord one thousand nine hundred and fifty.

J. Palmer

By Deputation from His Excellency the Governor.

RECORDED and ENROLLED in the Registrar General's Office, at Sydney, in New South Wales, this Seventh day of November 1950

J Wells
Registrar General.

No 1830666 Transfer and Grant dated 8th October, 1964 to Her Most Gracious Majesty Queen Elizabeth the Second of an Easement for Drainage affecting the piece of land shown as site of proposed easement 6 feet wide in Deposited Plan No 511996
Entered 4th January, 1965

Registrar General

COMPUTER FOLIO NO FURTHER
DEALINGS TO BE REGISTERED.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/130917

SEARCH DATE	TIME	EDITION NO	DATE
31/3/2014	10:52 AM	1	8/12/2006

LAND

LOT 1 IN DEPOSITED PLAN 130917
AT SOUTH STRATHFIELD
LOCAL GOVERNMENT AREA STRATHFIELD
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP130917

FIRST SCHEDULE

STRATHFIELD GOLF CLUB

SECOND SCHEDULE (3 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 J830666 EASEMENT FOR DRAINAGE AFFECTING THE PART OF THE LAND ABOVE DESCRIBED DESIGNATED (A) IN DP130917
3 AC788836 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 31/3/2014

APPENDIX C

WORKCOVER NSW INFORMATION

NSW GOVERNMENT | 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: D14/035964
Your Ref: David Yonge

25 March 2014

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

Dear Mr Yonge,

RE SITE: 84 Centenary Dr Strathfeld NSW

I refer to your site search request received by WorkCover NSW on 21 March 2014 requesting information on licences to keep dangerous goods for the above site.

Enclosed are copies of the documents that WorkCover NSW holds on Dangerous Goods Licence 35/010157 relating to the storage of dangerous goods at the above-mentioned premises, as listed on the Stored Chemical Information Database (SCID).

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

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Notification Team

Licence No. 35/010157

APPLICATION FOR RENEWAL
OF LICENCE TO KEEP DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: Please renew licence number 35/010157 to 3/08/2005 . I confirm that all the licence details shown below are correct (amend if necessary).

Leggett - ACTING SECRETARY B. R. LEGGETT 7/8/04.

(Signature) MANAGER. *(Please print name)* *(Date signed)*

for: STRATHFIELD GOLF CLUB

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO:***

WorkCover New South Wales
Dangerous Goods Licensing Section
LOCKED BAG 2906
LISAROW NSW 2252

Enquiries: ph (02) 43215500
fax (02) 92875500

Details of licence on 18 June 2004

Licence Number 35/010157 **Expiry Date** 3/08/2004

Licensee STRATHFIELD GOLF CLUB ACN 000 029 354

Postal Address: P O BOX 586 SYDNEY MARKETS NSW 2129

Licensee Contact GREG SCOTT Ph. 9642 0326 Fax. 9742 5572

Premises Licensed to Keep Dangerous Goods
STRATHFIELD GOLF CLUB
CENTENARY DR STRATHFIELD 2135

Nature of Site GOLF CLUBS

Major Supplier of Dangerous Goods VARIOUS

Emergency Contact for this Site ~~GREG FORD A/H 487-3134~~ Ph. ~~642-0326~~ 9763 2659

Site staffing 8 HRS 5 DAYS DEAN LEIGH A/H. 9575 7466 0400 029 017

Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
1	**UNDERGROUND TANK**	**Class 3**	**5000 L**
	UN 1203 PETROL		5000 L
2	**UNDERGROUND TANK**	**Class 3**	**2270 L**
	UN 1203 PETROL		2270 L
3	**EXEMPT - U/G TANK**	**Class C1**	**5000 L**
	UN 00C1 DIESEL		5000 L

WorkCover New South Wales, 400 Kent Street, Sydney 2000. Tel: 9370 5000 Fax: 9370 5999 ALL MAIL TO G.P.O. BOX 5364 SYDNEY 2001

WORKCOVER NEW SOUTH WALES

licence No. 35/010157

APPLICATION FOR RENEWAL
OF LICENCE FOR KEEPING DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: Please renew licence number 35/010157 to 04/08/2002 I confirm that all the licence details shown below are correct (amend if necessary).

Signature	Please print name	Date signed
B Scott.	GREG SCOTT	16/7/01

or: *STRATHFIELD GOLF CLUB*

THIS SIGNED DECLARATION SHOULD BE ***RETURNED TO: (please do not fax)***

WorkCover New South Wales
Dangerous Goods Licensing Section
GPO BOX 5364
SYDNEY 2001

Enquiries: ph (02) 9370 5187
fax (02) 9370 6104

Details of licence on 04/07/2001

Licence Number: 35/010157 **Expiry Date** 04/08/2001 **Number of Depots:** 2

Licensee STRATHFIELD GOLF CLUB ***ACN*** *000029354*

Postal address P O BOX 586 SYDNEY MARKETS NSW 2129

Licensee contact GREG SCOTT Ph. 642 0326 Fax: 742 5572

Premises Licensed to Keep Dangerous Goods

CENTENARY DR STRATHFIELD NSW 2135

Nature of site GOLF CLUBS

Major Supplier of Dangerous Goods VARIOUS

Emergency Contact for this Site GREG FORD A/H 487 3134 Ph. 642 0326

Site Staffing 8 HRS 5 DAYS

Details of Depots

Depot No	Depot Type	Goods Stored in depot	Qty
1	**UNDERGROUND TANK**	**Class 3**	**5000 L**
	UN 1203 PETROL		5000 L
2	**UNDERGROUND TANK**	**Class 3**	**2270 L**
	UN 1203 PETROL		2270 L

Reference

WorkCover Authority

APPLICATION FOR RENEWAL
OF LICENCE TO KEEP DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: *Please renew licence number 35/010157 to 1996. I confirm that all the licence details shown below are correct (amend if necessary).*

G. Scott ..... G. M. Scott ..... 19. 7. 95 .....
(Signature) *(Please print name)* *(Date signed)*
for: STRATHFIELD GOLF CLUB

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO:***

WorkCover Authority
Dangerous Goods Licensing Section (Level 3)
Locked Bag 10
P O CLARENCE STREET 2000

Details of licence on 29 June 1995

Licence Number 35/010157 **Expiry Date** 05/08/95

Licensee STRATHFIELD GOLF CLUB ACN 000 029 354

Postal Address BOX 4 P O, STRATHFIELD 2135
Licensee Contact ~~John McAndrew~~ Greg Scott Ph. 642 0326 Fax. 742 5572
Premises Licensed to Keep Dangerous Goods
CENTENARY DR
STRATHFIELD 2135

Nature of Site LICENSED GOLF CLUBS **Major Supplier of Dangerous Goods** VARIOUS

Emergency Contact for this Site Greg Ford a/h 487 3134 ph. 642 0326

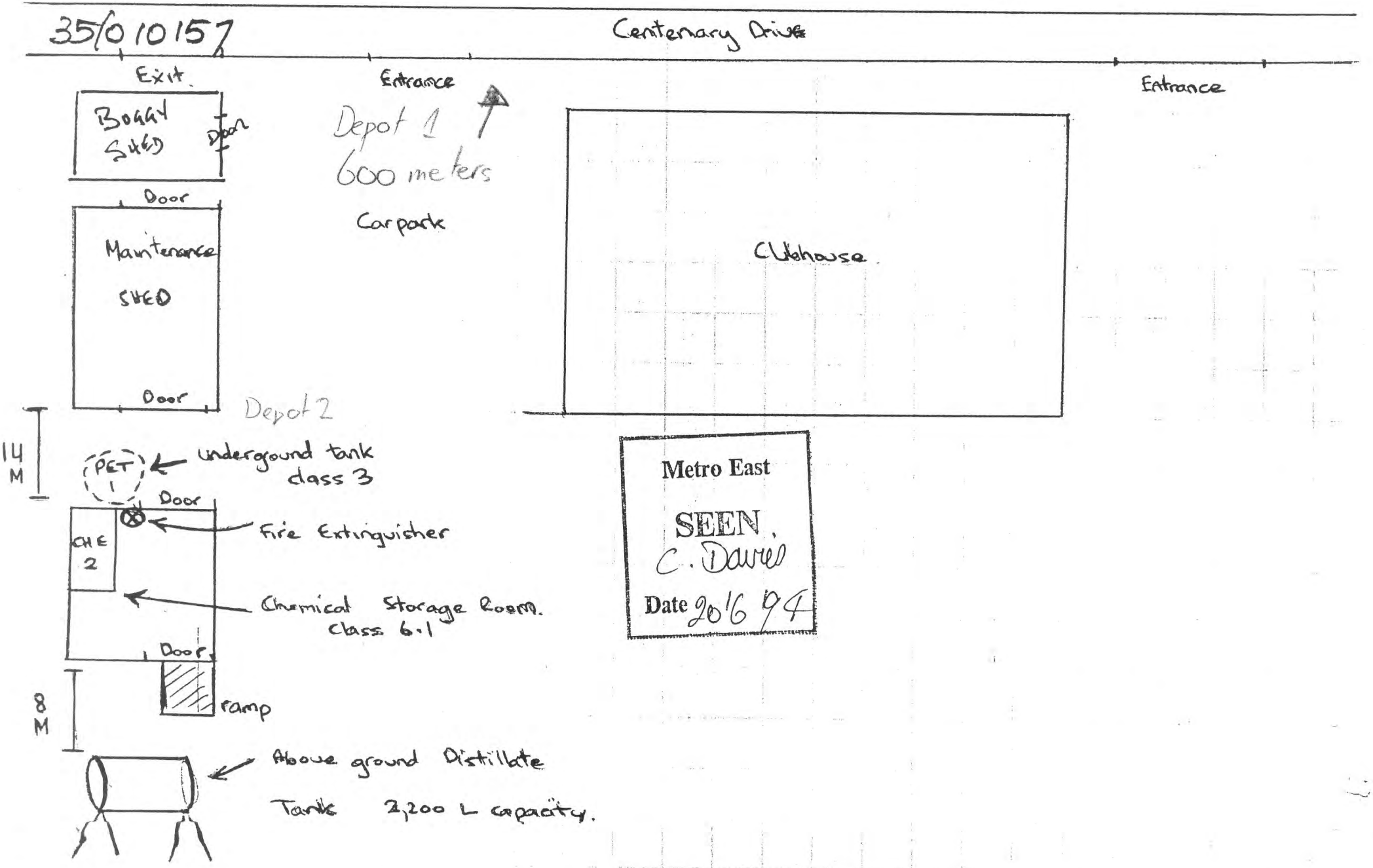
Site staffing 8 hrs 5 days

Details of Depots

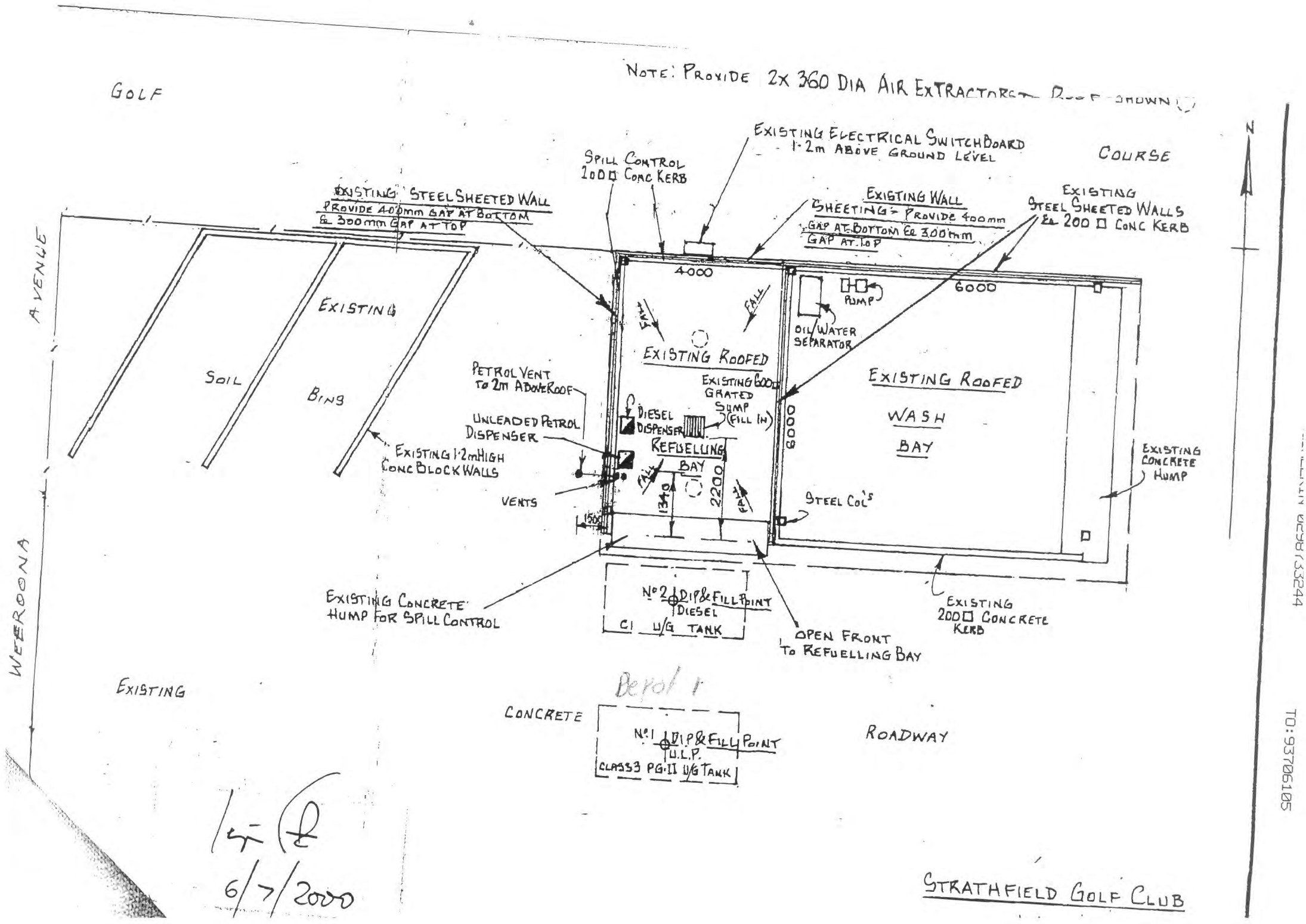
Depot No.	Depot Type	Goods Stored in Depot	Qty
1	UNDERGROUND TANK	Class 3	2270 L
		UN 1203 PETROL	2270 L

Site Sketch

Please carefully read the instructions in Part B of the guide before sketching the site.



PART B


NOTE: PROVIDE 2x 360 DIA AIR EXTRACTORS THRU ROOF SHOWN
GOLF
COURSE
EXISTING ELECTRICAL SWITCHBOARD 1·2m ABOVE GROUND LEVEL
SPILL CONTROL 100 □ CONC KERB
EXISTING STEEL SHEETED WALL PROVIDE 400mm GAP AT BOTTOM & 300mm GAP AT TOP
EXISTING WALL SHEETING - PROVIDE 400mm GAP AT BOTTOM & 300mm GAP AT TOP
EXISTING STEEL SHEETED WALLS & 200 □ CONC KERB
AVENUE
EXISTING
SOIL
BING
4000
6000
PUMP
OIL/WATER SEPARATOR
FALL
EXISTING ROOFED
EXISTING ROOFED WASH BAY
PETROL VENT TO 2m ABOVE ROOF
EXISTING 600 □ GRATED SUMP (FILL IN)
DIESEL DISPENSER
UNLEADED PETROL DISPENSER
EXISTING 1·2m HIGH CONC BLOCK WALLS
REFUELLING BAY
6000
VENTS
1340
2200
150
STEEL COL'S
EXISTING CONCRETE HUMP
EXISTING CONCRETE HUMP FOR SPILL CONTROL
No 2 DIP & FILL POINT DIESEL
C1 U/G TANK
OPEN FRONT TO REFUELLING BAY
EXISTING 200 □ CONCRETE KERB
WEEROONA
EXISTING
CONCRETE
Depot 1
No 1 DIP & FILL POINT U.L.P.
CLASS 3 PG·II U/G TANK
ROADWAY
N
STRATHFIELD GOLF CLUB
6/7/2000
TO:93706105

Application for Licence to Keep Dangerous Goods

WorkCover NEW SOUTH WALES

Application for ☐ new licence ☑ amendment ☐ transfer ☐ renewal of expired licence

PART A – Applicant and site information

See page 2 of Guidance Notes.

1 Name of applicant: STRATHFIELD GOLF CLUB — ACN: 000 029 354

2 Postal address of applicant: P.O Box 586 — Suburb/Town: SYDNEY MARKETS — Postcode: 2129

3 Trading name or site occupier's name: STRATHFIELD GOLF CLUB

4 Contact for licence inquiries — Phone: 97632659 — Fax: 97632671 — Name: GREG FORD

5 Previous licence number (if known): 35/ 010157

6 Previous occupier (if known):

7 Site to be licensed — No: MAINTENANCE SHED — Street: WEEROONA RD — Suburb / Town: STRATHFIELD — Postcode: 2135

8 Main business of site: GOLF COURSE

9 Site staffing: Hours per day: 8 — Days per week: 5

10 Site emergency contact — Phone: 0417 446 117 — Name: GREG FORD

11 Major supplier of dangerous goods: MOBIL OIL AUSTRALIA

12 If a new site or for amendments to depots – see page 4 of Guidance Notes.
Plan stamped by: Name of Accredited Consultant: ERIK LINDSTROM — Date stamped: 6/7/2000

I certify that the details in this application (including any accompanying computer disk) are correct and cover all licensable quantities of dangerous goods kept on the premises.

13 Signature of applicant: Greg Ford. — Printed name: GREG FORD — Date: 1/3/01

Please send your application, marked *CONFIDENTIAL*, to: **Dangerous Goods Licensing, WorkCover NSW, Level 3, GPO Box 5364, SYDNEY NSW 2001**

...is a depot? See page 5 of the Guidance Notes.

PART C – Dangerous Goods Storage *Complete one section per depot.*

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot Number	Type of depot (see page 5)	Depot Class	Maximum storage capacity
ULP 2	Underground Tank	3	5 KL

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3
1203	Unleaded Petrol B unmarked	3	II	Petrol	3.5KL	

Depot Number	Type of depot (see page 5)	Depot Class	Maximum storage capacity

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3

Depot Number	Type of depot (see page 5)	Depot Class	Maximum storage capacity

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3

Depot Number	Type of depot (see page 5)	Depot Class	Maximum storage capacity

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3

STRATHFIELD GOLF CLUB

orkCover New Suth Wales, 400 Kent Street. Sydney 2000. Tel: (02) 9370 5000 ALL MAIL TO LOCKED BAG 10. CLARENCE STREET, SYDNEY 2000
DX 13067, MARKET ST. SYDNEY

WORKCOVER NEW SOUTH WALES

Reference

APPLICATION FOR RENEWAL
OF LICENCE TO KEEP DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: *Please renew licence number 35/010157 to 1998. I confirm that all the licence details shown below are correct (amend if necessary).*

Scott ..... GREG SCOTT ..... 21/7/97.....
(Signature) *(Please print name)* *(Date signed)*
for: STRATHFIELD GOLF CLUB

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO:***
WorkCover New South Wales
Dangerous Goods Licensing Section (Level 3)
Locked Bag 10
P O CLARENCE STREET 2000

Enquiries: ph (02) 9370 5187
fax (02) 9370 6105

RECEIVED
23 JUL 1997
SCIENTIFIC SERVICES

Details of licence on 27 June 1997

Licence Number 35/010157 **Expiry Date** 05/08/97

Licensee STRATHFIELD GOLF CLUB ACN 000 029 354

Postal Address BOX 4 P O, STRATHFIELD 2135
Licensee Contact Greg Scott Ph. 642 0326 Fax. 742 5572
Premises Licensed to Keep Dangerous Goods
CENTENARY DR
STRATHFIELD 2135

Nature of Site LICENSED GOLF CLUBS **Major Supplier of Dangerous Goods** VARIOUS

Emergency Contact for this Site Greg Ford a/h 9487 3134 ph. 9642 0326

Site staffing 8 hrs 5 days

Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
1	**UNDERGROUND TANK**	**Class 3**	**2270 L**
		UN 1203 PETROL	2270 L
2	UNDERGROUND TANK	PETROL	5000 L

Form DG10

THE NEW SOUTH WALES GOVERNMENT
putting people first by managing better

PART A

SCIENTIFIC SERVICES BRANCH
5 MAY 199
DANGEROUS GOODS

WorkCover Authority

LICENCE TO KEEP DANGEROUS GOODS

(Dangerous Goods Act 1975)

Existing licence, issue scans to application C. Davell 20.6.95

Application for new licence, amendment or transfer

Expiry: 5.8.95

1. Name of applicant — ACN

STRATHFIELD ~~GOLF~~ CLUB. | X 000 029 354

2. Site to be licensed

No: N/N | Street: Centenary Drive

Suburb/Town: STRATHFIELD | Postcode: 2135

3. Previous licence number (if known): NOT KNOWN 35/010157

4. Nature of site: GOLF CLUB. ✓ 4242

5. Emergency contact on site:

Phone: 642 0326 | Name: GREG FORD (AFTER HOURS NUMBER 487 3134)

6. Site staffing: Hours per day: 8 | Days per week: 5

7. Major supplier of dangerous goods: Fuels - CLAM & MICHEL CHEMICALS - numerous companys.

8. If new site or significant modification

Plan stamped by: Accredited consultant's name: N/A | Date stamped: N/A.

9. Number of dangerous goods depots at site: 2 /

12 JUL 1994 ENTERED

10. Trading name or occupier's name: STRATHFIELD GOLF CLUB

11. Postal address of applicant: P.O BOX A ~~Centenary Drive~~ | Suburb/Town: Strathfield. | Postcode: 2135

12. Contact for licence enquiries:

Phone: 642 0326 | Fax: 642 5572 | Name: JOHN MCANDREW

I certify that the details contained in this application (or the accompanying computer disk) are true and correct

13. Signature of applicant: [signature] | Date: 4/5/93

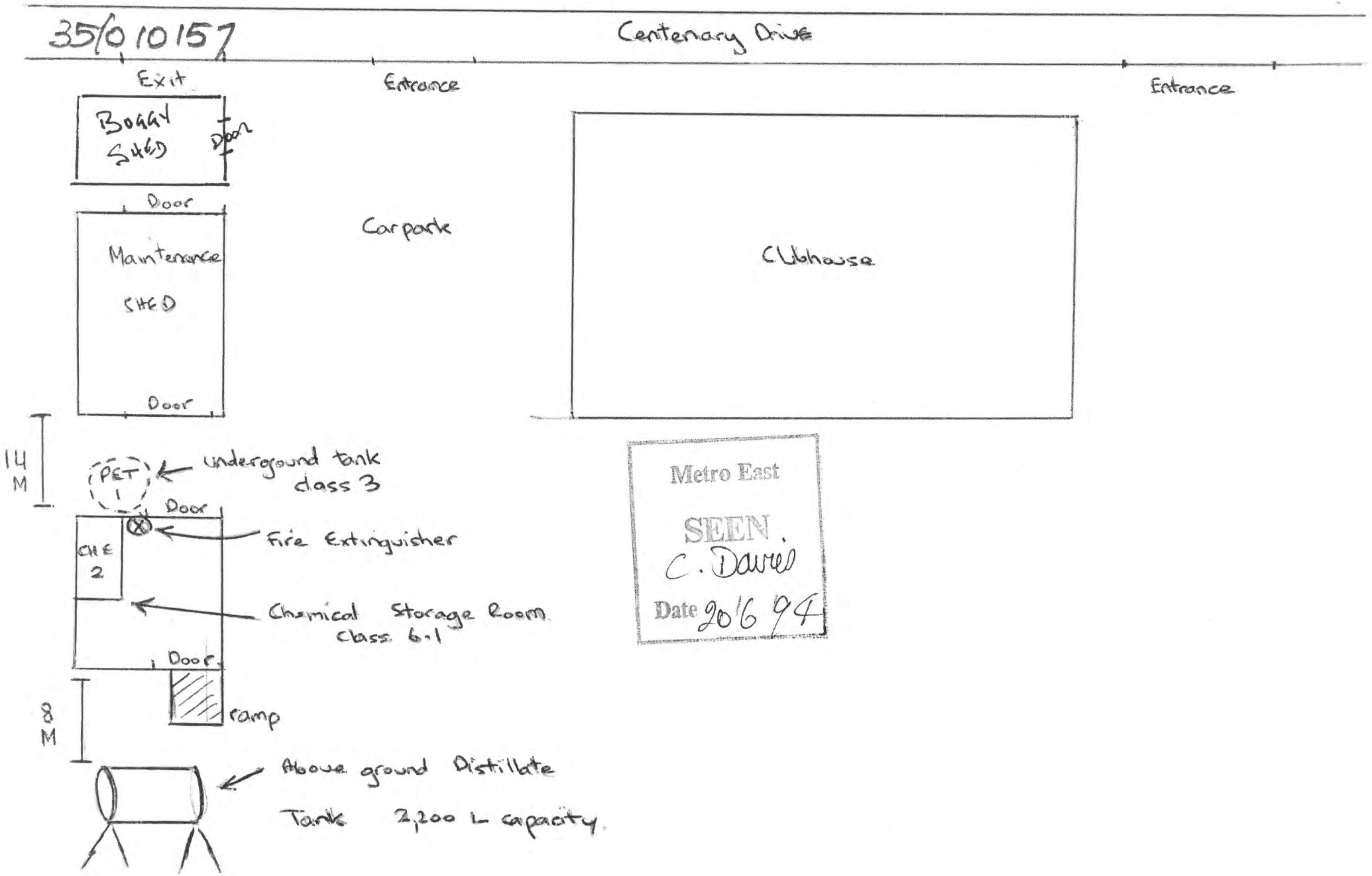
Sent 12/7/94

Please complete attached site sketch, depot listing and check sheet (if required) and return to WorkCover Authority in envelope provided.

Form DG1

Site Sketch

Please carefully read the instructions in Part B of the guide before sketching the site.



Metro East
SEEN
C. Daniel
Date 20/6/94

PART B

PART C

Complete 1 section per depot

CHEMICAL STORAGE
35/010157

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot number	Type of depot	Class	Licensed maximum storage capacity
PET 1	PETROL TANK UNDERGROUND	3	2,270 Litres

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³
1203	Petrol	3	II	3A1	Unleaded Petrol	2,270	L

Depot number	Type of depot	Class	Licensed maximum storage capacity
CHE 2	STORAGE ROOM CHEMICALS	6.1	

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³
3017	Pesticides Organophosphorus LIQUID TOXIC FLAMMABLE NOS	6.1	II		CHLORPYRIFOS METHANOL	40	L
					EXEMPT		

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

TELEPHONE:
GENERAL OFFICE, 76-0370
76-0379

ALL COMMUNICATIONS SHOULD
BE ADDRESSED TO THE
TOWN CLERK

PEASE QUOTE THIS REFERENCE
IN YOUR REPLY.

G6/167/B M/O'L

THE COUNCIL OF THE MUNICIPALITY OF STRATHFIELD REDMIRE

TOWN CLERK'S OFFICE
COUNCIL CHAMBERS
STRATHFIELD

MINES DEPARTMENT
31 MAY 1963
NO.
326

May 29, 1963.

The Under Secretary,
Department of Mines,
11 Loftus Street,
SYDNEY. N.S.W.

Dear Sir,

The Strathfield Golf Club, of Pemberton Street, Strathfield, has made application for permission to instal a 1,000 gallon petrol storage tank and pump at the Club's premises at Pemberton Street.

The installation will be situated some 30 feet east of the existing machinery shed. The petrol that will be stored is only for use in connection with the Club's motor vehicles, tractors and mowers.

This Council raises no objection to the proposal and it is accordingly submitted for your consideration. I shall be grateful to receive a reply at your earliest convenience.

Yours faithfully,

TOWN CLERK

ame of Occupier STRATHFIELD GOLF CLUB

(Surname) (First Names)

ading Name (if any)

stal Addres Postcode

ddress of the emises in which the pot or depots are uated PEMBERTON St. SOUTH STRATHFIELD Postcode

ccupation GOLF CLUB

ature of Premises CLUB

rticulars of construction of depots and maximum quantities of inflammable liquid and/or dangerous goods to be kept any one time.

PLEASE ~~SKETCH~~ SITE ON BACK ~~OR ATTACH PLAN~~

Depot No.	Construction of depots *			Inflammable Liquid		Dangerous Goods						
	Walls	Roof	Floor	Mineral spirit litres	Mineral oil litres	Class 1 litres	Class 2 litres	Class 3 kg	Class 4 m^3	Class 5A# litres	Class 5B# litres	Class 9 litres
1	Underground		Tank	2500								
2												
3												
4												
5												
6												
7												
8												
9												
10												
	TOTAL											

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

\# Insert water capacity of tanks or cylinders.

Name of Company supplying inflammable liquid ESSO

Have premises previously been licensed? YES - 10197-8

If known, state name of previous occupier AS ABOVE

Signature of applicant X R Coles Date 28.7.76

CERTIFICATE OF INSPECTION

I, ADLY NOUR being an Inspector under the Inflammable Liquid Act, 1915, do hereby certify that the premises or store described above does comply with the requirements of that Act and regulations with regard to its situation and construction for the keeping of inflammable liquid and/or dangerous goods in quantity and nature specified.

Signature of Inspector A Nour

Date 30.7.76

Inflammable Liquid—

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

Dangerous Goods—

Class 1.—Acetone, amyl acetate, butyl acetate, carbon bisulphide; any combination of substances of an inflammable character suitable for use as an industrial solvent and having a true flashing point of less than 73 degrees Fahrenheit.

Class 2.—Nitro-cellulose (also known as "pyroxylin" and "collodion cotton") moistened with an alcohol, butyl alcohol (also known as "butanol"), methylated spirits, vegetable turpentine; and any liquid or solid containing methylated spirits, having a true flashing point of less than 150 degrees Fahrenheit.

Class 3.—Nitro-cellulose product.

Class 4.—Compressed or dissolved acetylene contained in a porous substance.

Amendment to Storage Licence No. 10157

DIRECTIONS

1 Applications must be forwarded to the Chief Inspector of Inflammable Liquid, Explosives Department, No. 16 Grosvenor Street, Sydney (Box 48, G.P.O.), and must be accompanied by the prescribed fee, as set out hereunder:—

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

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

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

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

P.

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

1. Name in full of occupier ... Strathfield Golf Club
2. Occupation ...
3. Locality of the premises in which the depot or depots are situated ... No. or Name Pemberton St / Street / Town Strathfield Golf Course
4. Nature of premises (Dwelling, Garage, Store, etc.) ...
5. Will mineral spirit be kept in a prescribed underground tank depot? Yes

1/8

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

Depot No.	Construction of Depots			Inflammable Liquid		Dangerous Goods			
	Walls	Roof	Floor	Mineral Spirit Gallons	Mineral Oil Gallons	Class 1 Gallons	Class 2 Gallons	Class 3 lb.	Class 4 cub. ft.
1	Underground tank			1000					
2									
3									
4									
5									
6									
7									
8									
9	732								
10									

Cheq 65/-
Public Revenue Receipt
(Date) 20-8-63
Receipt No. 1920

Signature of Applicant W. Mossatt
Date of Application 21st AUGUST 1963
Postal Address P.O. Box H, STRATHFIELD

CERTIFICATE OF INSPECTION

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

Place Sydney
Date 16-9-63

Signature of Inspector Noel Boone

[PLEASE TURN OVER

75237 8.56 MI 1862 V. C. N. Blight, Government Printer

Mineral Oil—includes kerosene, mineral turpentine and ... same.

Mineral Spirit—includes petrol, benzine, benzolene, benzol and naphtha, and compositions containing same.

Dangerous Goods—

Class I.—Acetone, amylacetate, butylacetate, carbon bi-sulphide; any combination of substances of an inflammable character, other than ether alcohol, used as a solvent for nitro-cellulose or other cellulose compound, having a true flashing point of less than 73 degrees Fahrenheit.

Class II.—Nitro-cellulose, moistened with an alcohol, methylated spirits, vegetable turpentine and turpentine substitutes (other than inflammable liquid); any liquid or solid containing methylated spirits, having a true flashing point of less than 150 degrees Fahrenheit.

Class III.—Nitro-cellulose product and celluloid.

Class IV.—Compressed or dissolved acetylene contained in a porous substance.

DIRECTIONS.

1. Applications must be forwarded to the Chief Inspector of Inflammable Liquid, Explosives Department, Department of Mines, Bridge-street, Sydney, and must be accompanied by the statutory fee, as set out hereunder :—

REGISTRATION OF PREMISES (FEE, 10s.).—For quantities not exceeding 300 gallons of mineral oil and 100 gallons of mineral spirit, if kept together; or 800 gallons of mineral oil and 100 gallons of mineral spirit, if kept in separate depots; or 500 gallons of mineral spirit, if kept in an underground tank depot; or 800 gallons of mineral oil and 500 gallons of mineral spirit, if mineral spirit is kept in an underground tank depot.

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

STORE LICENSE, DIV. A (FEE, £1).—For quantities in excess of those stated above, but not exceeding 4,000 gallons mineral oil and/or mineral spirit, and/or Dangerous Goods of Classes 1 and 2.

STORE LICENSE, DIV. B (FEE, £2).—For quantities exceeding 4,000 gallons of mineral oil and/or mineral spirit, and/or dangerous goods of Classes 1 and 2, and/or dangerous goods of Class 3.

For the keeping of Dangerous Goods of Classes 3 and/or 4.

2. The certificate of inspection at foot hereof must be signed by an Inspector under the Inflammable Liquid Act, 1915–1931, or Police Officer, or other officer duly authorised in that behalf, and where the premises are situated outside the Metropolitan Area it is requested that such certificate be obtained prior to forwarding application.

1. Name in full of occupier	Strathfield Golf Club.
2. Occupation	Golf Course Proprietors.
3. Locality of the premises in which the depot or depots are situated	No. or Name Street Cunnor Avenue Town Strathfield.
4. Nature of premises (Dwelling, Garage, Store, etc.)	Golf Course.
5. Will mineral spirit be kept in a prescribed underground tank depot?	No
6. Will mineral spirit in quantities exceeding 3 gallons be kept or used for any industrial purpose ? (State nature of industry.)	No

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

Depot No.	Construction of Depots.			Inflammable Liquid.		Dangerous Goods.			
	Walls.	Roof.	Floor.	Mineral Spirit. Gallons.	Mineral Oil. Gallons.	Class 1. Gallons.	Class 2. Gallons.	Class 3. lb.	Class 4. cub. ft.
1	Iron	Iron	Concrete	444				101.	
2									39.
3									
4								7. 1/2.	15018.
5									
6									
7									
8									
9									
10									

Date of Application 6th December 1939

Signature of Applicant [signature]

Postal Address Secretary, Cunnor Avenue, Strathfield

CERTIFICATE OF INSPECTION.

I, A. S. Clark being an Inspector under the Inflammable Liquid Act, 1915–31, do hereby certify that the premises or store herein referred to and described is suitable with regard to its situation and construction for the safe keeping of inflammable liquid and/or dangerous goods in quantity and nature specified.

Place Sydney 6/12/39

Signature of Inspector A. S. Clark

[PLEASE TURN OVER

APPENDIX D

SECTION 149 PLANNING CERTIFICATES

STRATHFIELD COUNCIL

65 Homebush Road, Strathfield NSW 2135
PO Box 120, Strathfield NSW 2135 | P 02 9748 9999 | F 02 9764 1034
E council@strathfield.nsw.gov.au | www.strathfield.nsw.gov.au | ABN 52 719 940 263

PC1045/1314/eng
P240000
20139558:36496057

SAI Global Property
PO Box A2151
Sydney South
NSW 1235

RECEIVED
- 3 APR 2014

Issue Date : 31/03/2014
Receipt No. : 152822
Fee Paid : $53.00

Address : Centenary Drive, Homebush.
Description : Lot 1 & 2 DP 854298 & Lot 3 DP 431087
Owner : Strathfield Golf Club

Fees : Planning Certificate under Section 149(2) - $53.00
Planning Certificate under Section 149(5) - $80.00
Urgency fee - $105.00 (includes GST)

PLANNING CERTIFICATE

Section 149 (2) Environmental Planning & Assessment Act 1979

This certificate refers to the following matters prescribed under s149 (2) of the above Act.

Item 1. Names of relevant environmental planning instruments and development control plans.

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land.

REPLY: *Strathfield Local Environmental Plan 2012* commenced 29/3/13.
Refer to attachment for relevant State Environmental Planning Policies.

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

REPLY: No

(3) The name of each Development Control Plan (DCP) that applies to the carrying out of development on the land.

REPLY: Refer to attachment for relevant DCPs.

Item 2. Zoning and land use under relevant Local Environmental Plans.

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP).

(a) The identity of the zone, whether by reference to a name or by reference to a number.

REPLY: RE2 Private Recreation in the *Strathfield Local Environmental Plan 2012*

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

(c) The purposes for which the instrument provides that development may not be carried out without development consent.

(d) The purposes for which the instrument provides that the carrying out of development is prohibited within the zone.

REPLY: Refer to attachment for relevant land use table in the *Strathfield Local Environmental Plan 2012*

(e) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed.

REPLY: No.

(f) Whether the land includes or comprises critical habitat.

REPLY: No.

(g) Whether the land is in a heritage conservation area.

REPLY: No.

(h) Whether an item of environmental heritage is situated on the land.

REPLY: No.

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

Is the land identified within any zone under Part 3 of State Environmental Planning Policy (Sydney Region Growth Centres) 2006, a Precinct Plan, or a Proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act?

REPLY: No.

Item 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.*

General Housing Code

REPLY: Yes – Complying Development under the General Housing Code may be carried out on this land.

Rural Housing Code

REPLY: No – Complying Development under the Rural Housing Code may not be carried out on this land.

Housing Alterations Code

REPLY: Yes – Complying Development under the Housing Alterations Code may be carried out on this land.

General Commercial and Industrial Code

REPLY: Yes – Complying Development under the General Commercial and Industrial Code may be carried out on this land.

Subdivision Code

REPLY: Yes – Complying Development under the Subdivision Code may be carried out on this land.

General Development Code

REPLY: Yes – Complying Development under the General Development Code may be carried out on this land.

Demolition Code

REPLY: Yes – Complying Development under the Demolition Code may be carried out on this land.

Item 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.

REPLY: No.

Item 4A. Certain information relating to beaches and coasts

Strathfield Municipal Council is identified as a coastal council of NSW pursuant to Planning Circular PS-11-001, issued on 24 January 2011, to which the following applies:

In relation to a coastal council:

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

REPLY: No - Council records at the date of this certificate do not indicate that the subject land is subject to an order under Part 4D of *the Coastal Protection Act 1979* in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land).

(2)(a) Whether the council has been notified under Section 55X of the *Coastal Protection Act* 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land).

REPLY: No - Council records at the date of this certificate do not indicate that Council has been notified under Section 55X of the *Coastal Protection Act* 1979 that temporary coastal protection works (within the meaning of the Act) have been placed on the land (or on public land adjacent to that land).

(2)(b) If works have been so placed - whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

REPLY: Not applicable.

(3) Whether any such information (if any) as required by the regulations under Section 56B of the *Coastal Protection Act 1979* to be included in the planning certificate and of which the council has been notified pursuant to those regulations.

REPLY: No - Council records indicate that Council has not been notified of such information (if any) as required by the regulations under Section 56B of the *Coastal Protection Act 1979* which should be included in the planning certificate.

Item 4B. Annual charges under *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works.

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

Note: "Existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of Section 553B of the *Local Government Act 1993*.

REPLY: No - Council records as at the date of this certificate do not indicate that the owner (or any previous owner) of the subject land has consented in writing to the land being subject to annual charges under Section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of Section 553B of that Act).

Item 5. Mine subsidence

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

REPLY: No.

Item 6. Road widening and road realignment

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

(a) Division 2 of Part 3 of the *Roads Act 1993*; or

(b) Any environmental planning instrument; or

(c) Any resolution of the Council

REPLY: No.

Item 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 landslip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

REPLY: Yes – Council has adopted by resolution a policy for the management of development on contaminated land. This policy will restrict development of land:

- Which is affected by contamination;
- Which has been used for certain purposes;
- In respect of which there is not sufficient information about contamination;
- Which is proposed to be used for certain purposes;
- In other circumstances contained in the policy.

Refer to Part K – Development on Contaminated Land of the *Strathfield Consolidated Development Control Plan 2005* for more information.

Item 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.

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

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

REPLY: Floodplain Risk Management Study for Cooks River and Coxs Creek is not completed; and Council is not in position to comment on flood levels for the other two parcels of land east of Hedges Avenue at this stage.

Item 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.

REPLY: No.

Item 9. Contributions plans

The name of each contributions plan applying to the land.

REPLY: Strathfield Indirect Development Contributions Plan 2010 (Amended 3 September 2010).

Strathfield Direct Development Contributions Plan 2010 (Amended 3 September 2010).

Item 9A. Biodiversity certified land

Whether or not the subject land is biodiversity certified land?

REPLY: No – Council is not aware that the subject land is biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995)

Item 10. Bio-banking agreements

Whether or not a bio-banking agreement, has been entered in to the subject land?

REPLY: No – Council is not aware of a bio-banking agreement entered in to the subject land under section 127D of the *Threatened Species Conservation Act 1995.*

Item 11. Bush Fire Prone Land

Whether or not the land is bush fire prone land.

REPLY: No - No land in Strathfield LGA is identified as bush fire prone land as defined in the Act.

Item 12. Property vegetation plans

If the land is land to which a property vegetation plan under the *Native Vegetation Act 2003* applies, a statement to that effect (but only if the Council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

REPLY: No.

Item 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).

REPLY: No.

Item 14. Directions under Part 3A

Whether or not 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.

REPLY: No, the site has not been identified as a project on the land under Part 4 of the Act.

Item 15. Site compatibility certificates and conditions for seniors housing

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

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

(i) The period for which the certificate is current, and;

(ii) That a copy may be obtained from the head office of the Department of Planning, and;

(b) A statement setting out any terms of a kind referred to in clause 18(2) of *State Environmental Planning Policy (Housing For Seniors or People with a Disability) 2004* that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

REPLY: No – Council is not aware of a current site compatibility certificate (seniors housing) being issued for subject site in respect of the proposed development on the land.

Item 16. Site compatibility certificates for infrastructure

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

(a) The period for which the certificate is valid, and;

(b) That a copy may be obtained from the head office of the Department of Planning.

REPLY: No – Council is not aware of a valid site compatibility certificate (infrastructure) being issued in respect of the proposed development on the land.

Item 17. Site compatibility certificates and conditions for affordable rental housing

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

(a) The period for which the certificate is valid, and;

(b) That a copy may be obtained from the head office of the Department of Planning

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

REPLY: No – Council is not aware of a current site compatibility certificate (affordable rental housing) being issued in respect of the proposed development on the land.

Item 18. Site verification certificates

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

(a) the matter certified by the certificate, and

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

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

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

REPLY: No – Council is not aware of a current site verification certificate (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) being issued in respect of the proposed development on the land.

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Item 19. Matters arising under the Contaminated Land Management Act 1997

Section 59(2) of the *Contaminated Land Management Act 1997* prescribes the following additional matters to be specified in planning certificates:

(a) At the date of this certificate, is the land to which this certificate relates significantly contaminated land?

REPLY: No – Council records as at the date of this certificate do not indicate that the subject land is declared by the Environment Protection Authority to be significantly contaminated land as defined under the *Contaminated Land Management Act 1997.*

(b) At the date of this certificate, is the land to which this certificate relates subject to a management order?

REPLY: No – Council records as at the date of this certificate do not indicate that the subject land is subject to a management order.

(c) At the date of this certificate, is the land to which this certificate relates the subject of an approved voluntary management proposal?

REPLY: No – Council records do not indicate at the date of this certificate that the land to which this certificate relates is the subject of an approved voluntary management proposal.

(d) At the date of this certificate, is the land to which this certificate relates subject to an ongoing maintenance order?

REPLY: No – Council records do not indicate at the date of this certificate that the land to which this certificate relates is subject to an ongoing maintenance order.

(e) At the date of this certificate, is the land to which this certificate relates the subject of a site audit statement and a copy of such a statement has been provided to the Council?

REPLY: No – Council records do not indicate at the date of this certificate that the land to which this certificate relates is subject of a site audit statement and a copy of such a statement has been provided to the Council.

ROGER BROOK
STRATEGIC PLANNING CO-ORDINATOR

Strathfield Municipal Council
Recreation Zoned Sites

Attachments referred to in Section 149 Certificate No: PC 1045/13/4/eng

Attachment referred to in Item 1 (1)

SEPP (State and Regional Development) 2011 – published 28.9.11
The aims of this Policy are to identify development that is State significant development, to identify development that is State significant infrastructure and critical State significant infrastructure and to confer functions on joint regional planning panels to determine development applications.

SEPP (Exempt and Complying Development Codes) 2008 - gazetted 12.12.08.
The policy provides exempt and complying development codes that have State-wide application, identifying, in the General Exempt Development Code, types of development that may be carried out without the need for development consent; and, in the General Housing Code, types of complying development that may be carried out in accordance with a complying development certificate as defined in the *Environmental Planning and Assessment Act 1979*.

State Environmental Planning Policy No.55 - Remediation of land (gazetted 28.8.98) **-** Introduces state-wide planning controls for the remediation of contaminated land. If the land is unsuitable, remediation must take place before the land is developed. The policy defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals.

State Environmental Planning Policy No.64 - Advertising and Signage - gazetted 16.3.01 aims to ensure that signage including advertising is compatible with the desired amenity and visual character of an area, provides effective communication in suitable locations and is of a high quality and design. The policy prohibits advertisements in certain locations and sets controls for advertisements along major roads and waterways. The SEPP was amended in August 2007 regarding outdoor advertising in transport corridors (eg freeways, tollways and rail corridors).

SEPP (Temporary Structures) 2007 – gazetted 28.09.07
Provides for the erection of temporary structures and the use of places of public entertainment while protecting public safety and local amenity. Note the name of this policy was changed from SEPP (Temporary Structures and Places of Public Entertainment) 2007 to SEPP (Temporary Structures) 2007 effective 26.10.09.

SEPP (Major Development) 2005 – gazetted 01.08.05
Defines certain developments that are major projects to be assessed under Part 3A of the Environmental Planning and Assessment Act 1979 and determined by the Minister for Planning. It also provides planning provisions for State significant sites. In addition, the SEPP identifies the council consent authority functions that may be carried out by joint regional planning panels (JRPPs) and classes of regional development to be determined by

JRPPs. Note: This SEPP was formerly known as State Environmental Planning Policy (Major Projects) 2005.

SEPP (infrastructure) 2007
Gazetted 21.12.07 - provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

Attachment referred to in Item 1 (2)

Refer to **attachment**

Attachment referred to in Item 1 (3)

Strathfield Consolidated Development Control Plan 2005 Part E - Child Care Centres

Strathfield Consolidated Development Control Plan 2005 Part H - Waste Management

Strathfield Consolidated Development Control Plan 2005 Part I - Provision of Off-Street Parking Facilities.

Strathfield Consolidated Development Control Plan 2005 Part J – Erection and Display of Advertising Signs and Structures

Strathfield Consolidated Development Control Plan 2005 Part K - Development on Contaminated Land

Strathfield Consolidated Development Control Plan 2005 Part L - Public Notification Requirements for Development and Complying Development Applications

Strathfield Consolidated Development Control Plan 2005 Part N – Water Sensitive Urban Design

Attachment referred to in Items 2 (d)

Refer to **attached** "LAND USE TABLE- RECREATION ZONES"

LAND USE TABLE – RECREATION ZONES

Zone RE1 Public Recreation

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.

2. Permitted without consent

Building identification signs; Business identification signs; Environmental facilities; Environmental protection works; Horticulture

3. Permitted with consent

Child care centres; Community facilities; Information and education facilities; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Residential care facilities; Respite day care centres; Roads; Water recycling facilities

4. Prohibited

Any development not specified in item 2 or 3

Zone RE2 Private Recreation

1. Objectives of zone

- To enable land to be used for private 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.

2. Permitted without consent

Environmental facilities; Environmental protection works

3. Permitted with consent

Building identification signs; Business identification signs; Community facilities; Depots; Horticulture; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Registered clubs; Roads; Water recycling facilities

4. Prohibited

Any development not specified in item 2 or 3

STRATHFIELD LEP 2012 EXEMPT AND COMPLYING DEVELOPMENT

The LEP identifies the types of development which are exempt and complying development within the Strathfield Municipality.

Exempt development consists of development that has minimal impact and complies with the set criteria listed in Part 3 of the Strathfield LEP 2012. No development consent is required for exempt development.

Complying development consists of development that is more complex than exempt and does require development consent by either Council or an Accredited Certifier. Development is only complying development if it meets all the specified criteria in Part 3 of the Strathfield LEP 2012.

Details of exempt and complying development can be obtained by contacting the Customer Service Staff on 9748-9999 during business hours.

****

TREE PRESERVATION ORDER

In accordance with the Tree Preservation Order applying to the Strathfield Council area, no tree having a height greater than 4.0 metres or a girth greater than 0.5 metres measured at a point 1.0 metres above ground level, shall be ringbarked, cut down, topped, lopped, removed, injured or willfully destroyed without prior written consent of Council.

- **NOTE:**

1) Any person who contravenes or causes or permits to be contravened the provisions of the Tree Preservation Order shall be guilty of an offence.

2) **PENALTY**: Section 126 of the Environmental Planning and Assessment Act, 1979

A person guilty of an offence against this Act shall, for every such offence, be liable to the penalty expressly imposed and, if no penalty is so imposed, to a penalty not exceeding $1,100,000. The Court may also direct that new trees and vegetation be planted and that a security be paid to ensure their establishment.

STRATHFIELD COUNCIL

65 Homebush Road, Strathfield NSW 2135
PO Box 120, Strathfield NSW 2135 | P 02 9748 9999 | F 02 9764 1034
E council@strathfield.nsw.gov.au | www.strathfield.nsw.gov.au | ABN 52 719 940 263

PC1046/1314/eng
P128000
20139799:36496144

SAI Global Property
PO Box A2151
Sydney South
NSW 1235

Issue Date : 31/03/2014
Receipt No. : 152822
Fee Paid : $53.00

Address : Liverpool Rd, Strathfield South.
Description : Lot 1 DP 130917
Owner : Strathfield Golf Club

Fees : Planning Certificate under Section 149(2) - $53.00
Planning Certificate under Section 149(5) - $80.00
Urgency fee - $105.00 (includes GST)

PLANNING CERTIFICATE

Section 149 (2) Environmental Planning & Assessment Act 1979

This certificate refers to the following matters prescribed under s149 (2) of the above Act.

Item 1. Names of relevant environmental planning instruments and development control plans.

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land.

REPLY: *Strathfield Local Environmental Plan 2012* commenced 29/3/13.
Refer to attachment for relevant State Environmental Planning Policies.

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

REPLY: No

(3) The name of each Development Control Plan (DCP) that applies to the carrying out of development on the land.

REPLY: Refer to attachment for relevant DCPs.

Item 2. Zoning and land use under relevant Local Environmental Plans.

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP).

(a) The identity of the zone, whether by reference to a name or by reference to a number.

REPLY: R2 Low Density Residential in the *Strathfield Local Environmental Plan 2012*

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

(c) The purposes for which the instrument provides that development may not be carried out without development consent.

(d) The purposes for which the instrument provides that the carrying out of development is prohibited within the zone.

REPLY: Refer to attachment for relevant land use table in the *Strathfield Local Environmental Plan 2012*

(e) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed.

REPLY: Yes – Refer to Strathfield LEP 2012 Lot Size Map

(f) Whether the land includes or comprises critical habitat.

REPLY: No.

(g) Whether the land is in a heritage conservation area.

REPLY: No.

(h) Whether an item of environmental heritage is situated on the land.

REPLY: No.

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

Is the land identified within any zone under Part 3 of State Environmental Planning Policy (Sydney Region Growth Centres) 2006, a Precinct Plan, or a Proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act?

REPLY: No.

Item 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.*

General Housing Code

REPLY: Yes – Complying Development under the General Housing Code may be carried out on this land.

Rural Housing Code

REPLY: No – Complying Development under the Rural Housing Code may not be carried out on this land.

Housing Alterations Code

REPLY: Yes – Complying Development under the Housing Alterations Code may be carried out on this land.

General Commercial and Industrial Code

REPLY: Yes – Complying Development under the General Commercial and Industrial Code may be carried out on this land.

Subdivision Code

REPLY: Yes – Complying Development under the Subdivision Code may be carried out on this land.

General Development Code

REPLY: Yes – Complying Development under the General Development Code may be carried out on this land.

Demolition Code

REPLY: Yes – Complying Development under the Demolition Code may be carried out on this land.

Item 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.

REPLY: No.

Item 4A. Certain information relating to beaches and coasts

Strathfield Municipal Council is identified as a coastal council of NSW pursuant to Planning Circular PS-11-001, issued on 24 January 2011, to which the following applies:

In relation to a coastal council:

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

REPLY: No - Council records at the date of this certificate do not indicate that the subject land is subject to an order under Part 4D of *the Coastal Protection Act 1979* in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land).

(2)(a) Whether the council has been notified under Section 55X of the *Coastal Protection Act* 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land).

REPLY: No - Council records at the date of this certificate do not indicate that Council has been notified under Section 55X of the *Coastal Protection Act* 1979 that temporary coastal protection works (within the meaning of the Act) have been placed on the land (or on public land adjacent to that land).

(2)(b) If works have been so placed - whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

REPLY: Not applicable.

(3) Whether any such information (if any) as required by the regulations under Section 56B of the *Coastal Protection Act 1979* to be included in the planning certificate and of which the council has been notified pursuant to those regulations.

REPLY: No - Council records indicate that Council has not been notified of such information (if any) as required by the regulations under Section 56B of the *Coastal Protection Act 1979* which should be included in the planning certificate.

Item 4B. Annual charges under *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works.

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

Note: "Existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of Section 553B of the *Local Government Act 1993*.

REPLY: No - Council records as at the date of this certificate do not indicate that the owner (or any previous owner) of the subject land has consented in writing to the land being subject to annual charges under Section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of Section 553B of that Act).

Item 5. Mine subsidence

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

REPLY: No.

Item 6. Road widening and road realignment

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

(a) Division 2 of Part 3 of the *Roads Act 1993*; or

(b) Any environmental planning instrument; or

(c) Any resolution of the Council

REPLY: No.

Item 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 landslip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

REPLY: Yes – Council has adopted by resolution a policy for the management of development on contaminated land. This policy will restrict development of land:

- Which is affected by contamination;
- Which has been used for certain purposes;
- In respect of which there is not sufficient information about contamination;
- Which is proposed to be used for certain purposes;
- In other circumstances contained in the policy.

Refer to Part K – Development on Contaminated Land of the *Strathfield Consolidated Development Control Plan 2005* for more information.

Item 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.

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

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

REPLY: Floodplain Risk Management Study for Cooks River and Coxs Creek is not completed; and Council is not in position to comment on flood levels for the other two parcels of land east of Hedges Avenue at this stage.

Item 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.

REPLY: No.

Item 9. Contributions plans

The name of each contributions plan applying to the land.

REPLY: Strathfield Indirect Development Contributions Plan 2010 (Amended 3 September 2010).

Strathfield Direct Development Contributions Plan 2010 (Amended 3 September 2010).

Item 9A. Biodiversity certified land

Whether or not the subject land is biodiversity certified land?

REPLY: No – Council is not aware that the subject land is biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995)

Item 10. Bio-banking agreements

Whether or not a bio-banking agreement, has been entered in to the subject land?

REPLY: No – Council is not aware of a bio-banking agreement entered in to the subject land under section 127D of the *Threatened Species Conservation Act 1995.*

Item 11. Bush Fire Prone Land

Whether or not the land is bush fire prone land.

REPLY: No - No land in Strathfield LGA is identified as bush fire prone land as defined in the Act.

Item 12. Property vegetation plans

If the land is land to which a property vegetation plan under the *Native Vegetation Act 2003* applies, a statement to that effect (but only if the Council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

REPLY: No.

Item 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).

REPLY: No.

Item 14. Directions under Part 3A

Whether or not 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.

REPLY: No, the site has not been identified as a project on the land under Part 4 of the Act.

Item 15. Site compatibility certificates and conditions for seniors housing

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

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

(i) The period for which the certificate is current, and;

(ii) That a copy may be obtained from the head office of the Department of Planning, and;

(b) A statement setting out any terms of a kind referred to in clause 18(2) of *State Environmental Planning Policy (Housing For Seniors or People with a Disability) 2004* that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

REPLY: No – Council is not aware of a current site compatibility certificate (seniors housing) being issued for subject site in respect of the proposed development on the land.

Item 16. Site compatibility certificates for infrastructure

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

(a) The period for which the certificate is valid, and;

(b) That a copy may be obtained from the head office of the Department of Planning.

REPLY: No – Council is not aware of a valid site compatibility certificate (infrastructure) being issued in respect of the proposed development on the land.

Item 17. Site compatibility certificates and conditions for affordable rental housing

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

(a) The period for which the certificate is valid, and;

(b) That a copy may be obtained from the head office of the Department of Planning

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

REPLY: No – Council is not aware of a current site compatibility certificate (affordable rental housing) being issued in respect of the proposed development on the land.

Item 18. Site verification certificates

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

(a) the matter certified by the certificate, and

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

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

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

REPLY: No – Council is not aware of a current site verification certificate (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) being issued in respect of the proposed development on the land.

Item 19. Matters arising under the Contaminated Land Management Act 1997

Section 59(2) of the *Contaminated Land Management Act 1997* prescribes the following additional matters to be specified in planning certificates:

(a) At the date of this certificate, is the land to which this certificate relates significantly contaminated land?

REPLY: No – Council records as at the date of this certificate do not indicate that the subject land is declared by the Environment Protection Authority to be significantly contaminated land as defined under the *Contaminated Land Management Act 1997*.

(b) At the date of this certificate, is the land to which this certificate relates subject to a management order?

REPLY: No – Council records as at the date of this certificate do not indicate that the subject land is subject to a management order.

(c) At the date of this certificate, is the land to which this certificate relates the subject of an approved voluntary management proposal?

REPLY: No – Council records do not indicate at the date of this certificate that the land to which this certificate relates is the subject of an approved voluntary management proposal.

(d) At the date of this certificate, is the land to which this certificate relates subject to an ongoing maintenance order?

REPLY: No – Council records do not indicate at the date of this certificate that the land to which this certificate relates is subject to an ongoing maintenance order.

(e) At the date of this certificate, is the land to which this certificate relates the subject of a site audit statement and a copy of such a statement has been provided to the Council?

REPLY: No – Council records do not indicate at the date of this certificate that the land to which this certificate relates is subject of a site audit statement and a copy of such a statement has been provided to the Council.

ROGER BROOK
STRATEGIC PLANNING CO-ORDINATOR

Strathfield Municipal Council
Residential Zoned Sites

Attachments referred to in Section 149 Certificate No. PC 1046/1314/

Attachment referred to in Item 1 (1)

SEPP (State and Regional Development) 2011 – published 28.9.11
The aims of this Policy are to identify development that is State significant development, to identify development that is State significant infrastructure and critical State significant infrastructure and to confer functions on joint regional planning panels to determine development applications.

SEPP (Affordable Rental Housing) 2009 – published 31.07.09
Establishes a consistent planning regime for the provision of affordable rental housing. The policy provides incentives for new affordable rental housing, facilitates the retention of existing affordable rentals, and expands the role of not-for-profit providers. It also aims to support local centres by providing housing for workers close to places of work, and facilitate development of housing for the homeless and other disadvantaged people.

SEPP (Exempt and Complying Development Codes) 2008 - gazetted 12.12.08. The policy provides exempt and complying development codes that have State-wide application, identifying, in the General Exempt Development Code, types of development that may be carried out without the need for development consent; and, in the General Housing Code, types of complying development that may be carried out in accordance with a complying development certificate as defined in the *Environmental Planning and Assessment Act 1979*.

State Environmental Planning Policy (Building Sustainability Index) 2004 – gazetted 25.06.04. This SEPP operates in conjunction with Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004 to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP 1 does not apply in relation to any development standard arising under BASIX.

SEPP (Housing for Seniors or People with a Disability) 2004 - gazetted 31.03.04. Encourages the development of high quality accommodation for our ageing population and for people who have disabilities - housing that is in keeping with the local neighbourhood. Note the name of this policy was changed from SEPP (Seniors Living) 2004 to SEPP (Housing for Seniors or People with a Disability) 2004 effective 12.10.07

State Environmental Planning Policy No.55 - Remediation of land (gazetted 28.8.98) **-** Introduces state-wide planning controls for the remediation of contaminated land. If the land is unsuitable, remediation must take place before the land is developed. The policy defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals.

State Environmental Planning Policy No.64 - Advertising and Signage - gazetted 16.3.01 aims to ensure that signage including advertising is compatible with the desired amenity and

visual character of an area, provides effective communication in suitable locations and is of a high quality and design. The policy prohibits advertisements in certain locations and sets controls for advertisements along major roads and waterways. The SEPP was amended in August 2007 regarding outdoor advertising in transport corridors (eg freeways, tollways and rail corridors).

State Environmental Planning Policy No.65 - Design Quality of Residential Flat Development - gazetted 26.7.02 and amended 20.12.02 aims to improve the design and quality of residential flat developments. The policy identifies certain performance criteria which must be taken into account when determining an application and also makes provision for Design Review Panels to provide independent expert advice to councils on the merit of residential flat development.

SEPP (Temporary Structures) 2007 – gazetted 28.09.07
Provides for the erection of temporary structures and the use of places of public entertainment while protecting public safety and local amenity. Note the name of this policy was changed from SEPP (Temporary Structures and Places of Public Entertainment) 2007 to SEPP (Temporary Structures) 2007 effective 26.10.09.

SEPP (Major Development) 2005 – gazetted 01.08.05
Defines certain developments that are major projects to be assessed under Part 3A of the Environmental Planning and Assessment Act 1979 and determined by the Minister for Planning. It also provides planning provisions for State significant sites. In addition, the SEPP identifies the council consent authority functions that may be carried out by joint regional planning panels (JRPPs) and classes of regional development to be determined by JRPPs. Note: This SEPP was formerly known as State Environmental Planning Policy (Major Projects) 2005.

SEPP (infrastructure) 2007
Gazetted 21.12.07 - provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

Attachment referred to in Item 1 (2)

Refer to **attachment**

Attachment referred to in Item 1 (3)

Strathfield Consolidated Development Control Plan 2005 Part A- Dwelling Houses and Ancillary Structures.

Strathfield Consolidated Development Control Plan 2005 Part B - Dual Occupancy Developments.

Strathfield Consolidated Development Control Plan 2005 Part C - Multiple Unit Housing (applies to Residential B zone only)

Strathfield Consolidated Development Control Plan 2005 Part E Child Care Centres

Strathfield Consolidated Development Control Plan 2005 Part F - Bed and Breakfast Establishments

Strathfield Consolidated Development Control Plan 2005 Part H - Waste Management

Strathfield Consolidated Development Control Plan 2005 Part I - Provision of Off-Street Parking Facilities.

Strathfield Consolidated Development Control Plan 2005 Part J - Erection and Display of and Advertising Signs and Structures.

Strathfield Consolidated Development Control Plan 2005 Part K - Development on Contaminated Land

Strathfield Consolidated Development Control Plan 2005 Part L - Public Notification Requirements for Development and Complying Development Applications

Strathfield Consolidated Development Control Plan 2005 Part M - Educational Establishments

Strathfield Consolidated Development Control Plan 2005 Part N – Water Sensitive Urban Design

Development Control Plan No. 20 - Parramatta Road Corridor Area (Site Specific DCP) (3.5.06)

Development Control Plan No. 25 - 79 Courallie Avenue, Homebush West (Site Specific DCP) (3.5.06)

***Codes** - Council has adopted codes relating to hospitals and landscaping.

Attachment referred to in Items 2 (d)

Refer to **attached** "LAND USE TABLE - RESIDENTIAL ZONES"

LAND USE TABLE - RESIDENTIAL ZONES

Zone R2 Low Density Residential

1. Objectives of zone

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To ensure that development of housing does not adversely impact the heritage significance of adjacent heritage items and conservation areas.

2. Permitted without consent

Home occupations

3. Permitted with consent

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Child care centres; Community facilities; Dwelling houses; Environmental protection works; Group homes; Health consulting rooms; Home businesses; Home industries; Places of public worship; Public administration buildings; Recreation areas;

Residential care facilities; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Water recycling facilities

4. Prohibited

Any development not specified in item 2 or 3

Zone R3 Medium Density Residential

1. Objectives of zone

- To provide for the housing needs of the community within a medium density residential environment.
- To provide a variety of housing types within a medium density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

2. Permitted without consent

Home occupations

3. Permitted with consent

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Child care centres; Community facilities; Dual occupancies; Dwelling houses; Environmental protection works; Group homes; Home businesses; Multi dwelling housing; Neighbourhood shops; Places of public worship; Recreation areas; Residential care facilities; Residential flat buildings; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Water recycling facilities

4. Prohibited

Any development not specified in item 2 or 3

Zone R4 High Density Residential

1. Objectives of zone

- To provide for the housing needs of the community within a high density residential environment.
- To provide a variety of housing types within a high density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

2. Permitted without consent

Home occupations

3. Permitted with consent

Boarding houses; Child care centres; Community facilities; Hotel or motel accommodation; Neighbourhood shops; Places of public worship; Residential flat buildings; Respite day care centres; Roads; Shop top housing; Any other development not specified in item 2 or 4

4. Prohibited

Advertising structures; Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Attached dwellings; Boat building and repair facilities; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Depots; Dual occupancies; Dwelling houses; Eco-tourist facilities; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Helipads; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Jetties; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Passenger transport facilities; Port facilities; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Registered clubs; Research stations; Restricted premises; Rural industries; Rural workers' dwellings; Semi-detached dwellings; Service stations; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Water recreation structures; Water treatment facilities; Wholesale supplies

STRATHFIELD LEP 2012 - EXEMPT AND COMPLYING DEVELOPMENT

The LEP identifies the types of development which are exempt and complying development within the Strathfield Municipality.

Exempt development consists of development that has minimal impact and complies with the set criteria listed in Part 3 of the Strathfield LEP 2012. No development consent is required for exempt development.

Complying development consists of development that is more complex than exempt and does require development consent by either Council or an Accredited Certifier. Development is only complying development if it meets all the specified criteria in Part 3 of the Strathfield LEP 2012.

Details of exempt and complying development can be obtained by contacting the Customer Service Staff on 9748-9999 during business hours.

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TREE PRESERVATION ORDER

In accordance with the Tree Preservation Order applying to the Strathfield Council area, no tree having a height greater than 4.0 metres or a girth greater than 0.5 metres measured at a point 1.0 metres above ground level, shall be ringbarked, cut down, topped, lopped, removed, injured or willfully destroyed without prior written consent of Council.

- **NOTE:**

1) Any person who contravenes or causes or permits to be contravened the provisions of the Tree Preservation Order shall be guilty of an offence.

2) **PENALTY**: Section 126 of the Environmental Planning and Assessment Act, 1979

A person guilty of an offence against this Act shall, for every such offence, be liable to the penalty expressly imposed and, if no penalty is so imposed, to a penalty not exceeding $1,100,000. The Court may also direct that new trees and vegetation be planted and that a security be paid to ensure their establishment.

APPENDIX E

SOIL PROFILE LOG SHEETS

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 1

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			ASPHALT: (100 mm thick)			
	S1 @ 0.2 m		GRAVELLY SILTY CLAY: dark grey with light grey, medium to high plasticity, some gravel PID = 0.2	CL/CH		M
			FILL			
	S2 @ 0.6 m	0.5	SILTY CLAY: orange brown with light grey, medium to high plasticity PID = 0.1	CL/CH		M
			BOREHOLE DISCONTINUED AT 0.8 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 2

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			ASPHALT: (100 mm thick)			
	S3 @ 0.2 m		SANDY GRAVEL: dark grey, fine to coarse grained, ash PID = 0.6 FILL	GW		D
	S4 @ 0.5 m	0.5	SILTY CLAY: light brown/yellow brown, medium plasticity PID = 0.3	CL		M
			BOREHOLE DISCONTINUE DAT 0.7 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 3

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			ASPHALT/SANDY GRAVEL: dark grey, fine to medium grained	GW		D
	S5 @ 0.2 m		SILTY CLAY: orange brown/light brown, medium plasticity PID = 0.1	CL		M-D
		0.5	BOREHOLE DISCONTINUED AT 0.5 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd | **GEOTECHNICAL LOG - NON CORE BOREHOLE**

Client: Strathfield Golf Club | Project / STS No.: 19623/4145C | **BOREHOLE NO.: BH 4**

Project: 84 Centenary Drive, Strathfield | Date : April 3, 2014

Location: Refer to Drawing No. 14/0671/2 | Logged: JK | Checked By: DWY/NR | Sheet 1 of 3

WATER TABLE	DEPTH (m)	SAMPLES / RECOVERY	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE	PID (ppm)	WELL CONSTRUCTION DETAILS
		S6	CLAYEY SILTY SAND: dark brown, fine to medium grained PID = 0.5 TOPSOIL/FILL	SM		M		
	0.5	S7/S8/ S9	GRAVELLY CLAYEY SAND: dark grey with dark brown, fine to medium grained, gravel, bricks PID = 0.3 FILL	CL		M		
		S10	SILTY CLAY: orange brown with light grey, medium to high plasticity PID = 0.3	CL/CH		M		
	1.0							
	1.5		SILTY CLAY: light grey with orang brown, medium plasticity, trace of shale gravel	CL		M-D		
	2.0		WEATHERED SHALE: light grey/brown with light grey and orange brown, clay seams			D		
	2.5							

NOTES: D - Disturbed Sample | U - Undisturbed Tube Sample | B - Bulk Sample

N - Standard Penetration Test (SPT) | H - Hand (recovery) | M- Machine (recovery)

Contractor: STS

Equipment: Edson RP70

Hole Diameter (mm): 100

Angle from Vertical (°):

Drill Bit: Spiral

See explanation sheets for meaning of all descriptive terms and symbols

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project / STS No.: 19623/4145C
Date : April 3, 2014
Logged: JK Checked By: DWY/NR

BOREHOLE NO.: BH 4
Sheet 2 of 3

WATER TABLE	DEPTH (m)	SAMPLES / RECOVERY	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE	PID (ppm)	WELL CONSTRUCTION DETAILS
			WEATHERED SHALE: light grey/brown with light grey and orange brown, clay seams			D		
	3.5							
	4.0							
	4.5							
	5.0							
	5.5							

NOTES:
D - Disturbed Sample
U - Undisturbed Tube Sample
B - Bulk Sample
N - Standard Penetration Test (SPT)
H - Hand (recovery)
M- Machine (recovery)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°):
Drill Bit: Spiral

SMEC Testing Services Pty Ltd | **GEOTECHNICAL LOG - NON CORE BOREHOLE**

Client: Strathfield Golf Club | Project / STS No.: 19623/4145C | **BOREHOLE NO.: BH 4**

Project: 84 Centenary Drive, Strathfield | Date : April 3, 2014

Location: Refer to Drawing No. 14/0671/2 | Logged: JK | Checked By: DWY/NR | Sheet 3 of 3

WATER TABLE	DEPTH (m)	SAMPLES / RECOVERY	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE	PID (ppm)	WELL CONSTRUCTION DETAILS
	6.5		WEATHERED SHALE: light grey/brown with light grey and orange brown, clay seams			M-VM		
	7.0							
	7.5		AUGER REFUSAL AT 7.5 M ON WEATHERED SHALE STANDPIPE PIEZOMETER INSTALLED					
	8.0							
	8.5							

NOTES: D - Disturbed Sample | U - Undisturbed Tube Sample | B - Bulk Sample

N - Standard Penetration Test (SPT) | H - Hand (recovery) | M- Machine (recovery)

Contractor: STS

Equipment: Edson RP70

Hole Diameter (mm): 100

Angle from Vertical (°):

Drill Bit: Spiral

See explanation sheets for meaning of all descriptive terms and symbols

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 5

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY CLAY: dark brown, low plasticity race of fine grained sand, trace of gravel	CL		M
	S11 @ 0.2 m		PID = 0.2 FILL			
	S12 @ 0.3 m		SILTY CLAY: yellow brown/light brown, medium plasticity PID = 0.2	CL		M
		0.5	BOREHOLE DISCONTINUED AT 0.4 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 6

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY CLAY: dark brown, low plasticity, trace of fine grained sand, trace of gravel	CL		M
	S13 @ 0.2 m		PID = 0.1			
			FILL			
	S14 @ 0.4 m		SILTY CLAY: light brown/orange brown, medium plasticity PID = 0.0	CL		M-D
		0.5	BOREHOLE DISCONTINUED AT 0.5 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 7

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY SANDY CLAY: dark grey, fine grained sand, low plasticity	CL		M
	S15 @ 0.2 m		PID = 0.2			
		0.5	FILL			
	S16 @ 0.6 m		SILTY CLAY: dark grey/brown with orange brown	CL/CH		M
			PID = 0.1			
			BOREHOLE DISCONTINUED AT 0.8 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 8

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY CLAY: dark brown, medium plasticity, trace of fine grained sand	CL		M
	S17 @ 0.2 m		PID = 0.9			
			TOPSOIL/FILL			
	S18 @ 0.4 m		SILTY CLAY: yellow brown/orange brown, medium plasticity PID = 0.2	CL		M
		0.5	BOREHOLE DISCONTINUED AT 0.5 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club
Project: 84 Centenary Drive, Strathfield
Location: Refer to Drawing No. 14/0671/2

Project No.: 19623/4145C
Date : April 3, 2014
Logged: JK

BOREHOLE NO.: BH 9

Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY CLAY: dark brown, low plasticity, trace of fine grained sand, occasional gravel	CL		M
	S19/S20/S21 @ 0.2 m		PID = 0.5			
			TOPSOIL/FILL			
	S22 @ 0.4 m		SILTY CLAY: yellow brown with orange brown, lo plasticity, trace of fine grained sand PID = 0.2	CL		M
		0.5	BOREHOLE DISCONTINUED AT 0.5 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: Strathfield Golf Club	Project No.: 19623/4145C	**BOREHOLE NO.: BH 10**
Project: 84 Centenary Drive, Strathfield	Date : April 3, 2014	Sheet 1 of 1
Location: Refer to Drawing No. 14/0671/2	Logged: JK	

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY CLAY: dark brown, low plasticity, trace of fine grained sand	CL		M
	S23 @ 0.2 m		PID = 0.6			
			TOPSOIL/FILL			
	S24 @ 0.4 m		SILTY CLAY: light brown/orange brown, medium plasticity, trace of fine grained sand	CL		M
			PID = 0.1			
		0.5				
			BOREHOLE DISCONTINUED AT 0.6 M			
		1.0				
		1.5				
		2.0				
		2.5				

NOTES: D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)

See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°) 0

APPENDIX F

GROUNDWATER WELL PURGING SHEETS

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

WELL PURGING FIELD PARAMETERS

Job No: 19623 Date: 17/4/14
Well No: GW1
Client: Strathfield Golf Club By: NE
Project: 4145C
Time Start: 1500
Time End: 1540
Standpipe Vol: 8 litres
LNAPL Present? Yes/No
Depth to Water after Sampling: 2.792 m

RL Top of PVC:
RL Pavement:
Stick Up: 0 none m
Depth to Water: 2.922 m from top PVC
RL Top of Water:
Depth of Well: 7.186 m from top PVC
Pump Method: Peristatic low flow
Meters Calibrated? Yes/No
Depth to Pump Intake: 2.7x m

Time (min)	Drawdown (m)	Flow rate (L/min)	Cum. Vol. (L)	Temp. (C)	EC (µs/cm)	pH (units)	Redox (mv)	DO (ppm)	Comments
10	<0.2	0.2	2.0	22.6	11751	4.86	165.1	0.62	Slightly turbid
20	<0.2	0.2	4.0	22.7	11011	4.62	172.4	0.56	becoming clear.
30	<0.2	0.2	6.0	22.7	11606	4.58	171.9	0.48	
40	<0.2	0.2	8.0	22.8	10849	4.57	172.9	0.59	
Stabilisation Criteria					±3%	±0.1	±10	±10%	**Stabilisation Achieved? Yes/No**

Sampling Details

TPH ☑ SVOCs ☐ PAHs ☑ Sulfate ☐ Cations ☐ Anions ☐
BTEX ☒ VOCs ☐ Ammonia ☐ OCP/OPP ☐ Metals ☒ Filtered? ☑
Cyanide ☐ Turbidity L☐ M☑ H☐ Sheen? Yes/No Colour Orange/brown Odour None
Sample No. GW1 QC Duplicate No. No. bottles 4

Cold	☐	Cool	☐	Mild	☐	Dry	☒	Humid	☐	Medium	☐	Rain	☐
Warm	☒	Hot	☐	Clear	☒	Cloudy	☐	Still	☐	Breeze	☐	Windy	☐

APPENDIX G

CHAIN OF CUSTODY DOCUMENTATION

CHAIN OF CUSTODY RECORD

Page ___of___.

SMEC Testing Services Pty Ltd Job No: 19623/4145C Order No: 10937

PO Box 6989 (postal)

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

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

E-Mail: nryan@smectesting.com.au Contact: Natasha Ryan

Laboratory: ALS Laboratory Group - Sydney Environmental Division

277-289 Woodpark Road, SMITHFIELD NSW 2164

Telephone: (02) 8784 8555 Fax: (02) 8784 8500 Contact: Jacob Waugh

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	S19	S26	ASBESTOS	CYANIDE	S5
1	S1	1		31/03/2014		soil			X			
2	S2	1		31/03/2014		soil			X			
3	S3	1		31/03/2014		soil		X		X	X	
4	S4	1		31/03/2014		soil			X			
5	S5	1		31/03/2014		soil			X			
6	S7	1		31/03/2014		soil		X		X	X	
7	S8	1		31/03/2014		soil						X
(1)	S9	1		31/03/2014		soil	Forward to ALS Brisbane for Analysis					X
8	S10	1		31/03/2014		soil			X			
9	S11	1		31/03/2014					X			
TOTAL		10						2	6	2	2	2

ANALYSIS

Environmental Division Brisbane

Work Order

EB1408108

Telephone : +61-7-3243 7222

Released by SMEC Testing Services Natasha Ryan Signed:	Date: 1/04/2014	Time:	CoC Number: P19623 - COC1
Received by: Ravinder Signed: ALS Syd	Date: 1/4/14	Time: 17:50	Your quotation: SMEC 2012 (EN/025/12)
			Preliminary results by: 8-Apr-14 / Final results by: 8-Apr-14

Comments:

Standard Detection Limits Apply, Standard Turnaround on Results

Please forward sample S9 to ALS Brisbane for Analysis

Rec'd 0930 3/4/14 8:35

CHAIN OF CUSTODY RECORD

Page ___of_____.

SMEC Testing Services Pty Ltd Job No: 19623/4145C Order No: 10937

PO Box 6989 (postal)

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

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

E-Mail: nryan@smectesting.com.au Contact: Natasha Ryan

Laboratory: ALS Laboratory Group - Sydney Environmental Division

277-289 Woodpark Road, SMITHFIELD NSW 2164

Telephone: (02) 8784 8555 Fax: (02) 8784 8500 Contact: Jacob Waugh

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	ANALYSIS S19	S26	ASBESTOS	CYANIDE	S5
1	S1	1		31/03/2014		soil			X			
2	S2	1		31/03/2014		soil			X			
3	S3	1		31/03/2014		soil		X		X	X	
4	S4	1		31/03/2014		soil			X			
5	S5	1		31/03/2014		soil			X			
6	S7	1		31/03/2014		soil		X		X	X	
7	S8	1		31/03/2014		soil						X
-	S9	1		31/03/2014		soil	**Forward to ALS Brisbane for Analysis**					X
8	S10	1		31/03/2014		soil			X			
9	S11	1		31/03/2014					X			
TOTAL		10						2	6	2	2	2

Environmental Division
Sydney
Work Order
ES1407168

Telephone : +61-2-8784 8555

Released by SMEC Testing Services
Natasha Ryan
Signed: Date: 1/04/2014 Time:

CoC Number: P19623 - COC1

Your quotation: SMEC 2012 (EN/025/12)

Received by: Ravinesh
Signed: ALS Syd Date: 1/4/14 Time: 17:50

Preliminary results by: 8-Apr-14

Final results by: 8-Apr-14

Comments:

Standard Detection Limits Apply, Standard Turnaround on Results

Please forward sample S9 to ALS Brisbane for Analysis

CHAIN OF CUSTODY RECORD

SMEC Testing Services Pty Ltd Job No: 19623/4145C Order No: 10937

PO Box 6989 (postal)

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

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

E-Mail: nryan@smectesting.com.au Contact: Natasha Ryan

Laboratory: ALS Laboratory Group - Sydney Environmental Division

277-289 Woodpark Road, SMITHFIELD NSW 2164

Telephone: (02) 8784 8555 Fax: (02) 8784 8500 Contact: Jacob Waugh

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	ANALYSIS S19	S26	ASBESTOS	CYANIDE
10	S12	1		31/03/2014		soil			X		
11	S13	1		31/03/2014		soil		X		X	
12	S14	1		31/03/2014		soil			X		
13	S15	1		31/03/2014		soil			X		
14	S16	1		31/03/2014		soil			X		
15	S17	1		31/03/2014		soil		X		X	X
16	S18	1		31/03/2014		soil			X		
17	S19	1		31/03/2014		soil			X		
18	S22	1		31/03/2014		soil			X		
19	S23	1		31/03/2014		soil			X	X	
20	S24	1		31/03/2014		soil			X		
TOTAL		11						2	9	3	1

Released by SMEC Testing Services Natasha Ryan Signed:	Date: 1/04/2014	Time:
Received by: Signed: Ravi	Date: 1/4/14	Time: 12:50

CoC Number: P19623 - COC2

Your quotation: SMEC 2012 (EN/025/12)

Preliminary results by:	Final results by:
8-Apr-14	8-Apr-14

Comments:

Standard Detection Limits Apply, Standard Turnaround on Results

CHAIN OF CUSTODY RECORD

Page ___ of ___.

SMEC Testing Services Pty Ltd Job No: 19623/4145C Order No: 11018
PO Box 6989 (postal)
14/1 Cowpasture Place (office), Wetherill Park NSW 2164
Telephone: (02) 9756 2166 Fax: (02) 9756 1137
E-Mail: nryan@smectesting.com.au Contact: Natasha Ryan

SMEC Testing Services

Laboratory: ALS Laboratory Group - Sydney Environmental Division
277-289 Woodpark Road, SMITHFIELD NSW 2164
Telephone: (02) 8784 8555 Fax: (02) 8784 8500 Contact: Jacob Waugh

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	ANALYSIS: W26
1	GW1	4		17/04/2014		Water		X
TOTAL								1

Environmental Division
Sydney
Work Order
ES1408789
Telephone : + 61-2-8784 8555

Released by SMEC Testing Services Natasha Ryan Signed:	Date: 17/04/2014	Time:
Received by: [signature] Signed: AG	Date: 17/4/14 16:50	Time: 16:08 12.8c

CoC Number: P19623 - COC2
Your quotation: SMEC 2012 (EN/025/12)
Preliminary results by: 28-Apr-14
Final results by: 28-Apr-14

Comments:

Standard Detection Limits Apply, Standard Turnaround on Results

APPENDIX H

ANALYTICAL LABORATORY REPORTS

CERTIFICATE OF ANALYSIS

Work Order	: **EB1408108**	Page	: 1 of 5
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: NATASHA RYAN	Contact	: Customer Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: nryan@smectesting.com.au	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 10937		
C-O-C number	: P19623-COC	Date Samples Received	: 03-APR-2014
Sampler	: ----	Issue Date	: 08-APR-2014
Site	: ----		
		No. of samples received	: 1
Quote number	: EN/025/13	No. of samples analysed	: 1

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

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Ryan Story	2IC Organic Instrument Chemist	Brisbane Inorganics
Ryan Story	2IC Organic Instrument Chemist	Brisbane Organics

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.

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

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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S9	----	----	----	----
			Client sampling date / time	31-MAR-2014 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1408108-001	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	**17.4**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**26**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**18**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**49**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**82**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**22**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**273**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**1.3**	----	----	----	----
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	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	>C10_C16	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	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
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	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S9	----	----	----	----
			Client sampling date / time	31-MAR-2014 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1408108-001	----	----	----	----
EP080: BTEXN - Continued								
^ **Total Xylenes**	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**72.9**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	**67.7**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	**80.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	52.7	133.7
Toluene-D8	2037-26-5	60.3	131.1
4-Bromofluorobenzene	460-00-4	59.2	126.6

QUALITY CONTROL REPORT

Work Order	: **EB1408108**	Page	: 1 of 6
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: NATASHA RYAN	Contact	: Customer Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: nryan@smectesting.com.au	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: P19623-COC	Date Samples Received	: 03-APR-2014
Sampler	: ----	Issue Date	: 08-APR-2014
Order number	: 10937		
		No. of samples received	: 1
Quote number	: EN/025/13	No. of samples analysed	: 1

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

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Ryan Story	2IC Organic Instrument Chemist	Brisbane Inorganics
Ryan Story	2IC Organic Instrument Chemist	Brisbane Organics

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**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 3375655)									
EB1408105-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	5	31.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	3	54.0	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	6	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	7	8	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3375656)									
EB1408105-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3374883)									
EB1407860-004	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3376736)									
EB1408105-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3374883)									
EB1407860-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3376736)									
EB1408105-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 3374883)									
EB1407860-004	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3375655)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	111	84	124
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	108	88	118
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	109	73	127
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	109	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	108	84	121
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	114	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	112	87	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3375656)								
EG035T: Mercury	7439-97-6	0.10	mg/kg	<0.1	2.57 mg/kg	104	81	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3374883)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	81.7	66	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3376736)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	111	84	117
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	108	78	120
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3374883)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	79.6	66	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3376736)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	428 mg/kg	115	86	117
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	103	77	121
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080: BTEXN (QCLot: 3374883)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	80.3	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	77.5	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	77.7	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	79.3	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	77.5	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	77.0	72	115

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**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3375655)							
EB1408108-001	S9	EG005T: Arsenic	7440-38-2	50 mg/kg	92.7	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	115	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	115	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	103	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	118	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3375656)							
EB1408108-001	S9	EG035T: Mercury	7439-97-6	5.0 mg/kg	108	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3374883)							
EB1407860-005	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	89.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3376736)							
EB1408108-001	S9	EP071: C10 - C14 Fraction	----	318 mg/kg	107	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	118	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3374883)							
EB1407860-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	85.5	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3376736)							
EB1408108-001	S9	EP071: >C10 - C16 Fraction	>C10_C16	428 mg/kg	114	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	130	70	130
EP080: BTEXN (QCLot: 3374883)							
EB1407860-005	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	75.7	70	130
		EP080: Toluene	108-88-3	2 mg/kg	78.2	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3374883)										
EB1407860-005	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	89.4	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3374883)										
EB1407860-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	85.5	----	70	130	----	----
EP080: BTEXN (QCLot: 3374883)										

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080: BTEXN (QCLot: 3374883) - continued										
EB1407860-005	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	75.7	----	70	130	----	----
		EP080: Toluene	108-88-3	2 mg/kg	78.2	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3375655)										
EB1408108-001	S9	EG005T: Arsenic	7440-38-2	50 mg/kg	92.7	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	25 mg/kg	115	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	115	----	70	130	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	103	----	70	130	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	118	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	100	----	70	130	----	----
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3375656)										
EB1408108-001	S9	EG035T: Mercury	7439-97-6	5.0 mg/kg	108	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3376736)										
EB1408108-001	S9	EP071: C10 - C14 Fraction	----	318 mg/kg	107	----	70	130	----	----
		EP071: C15 - C28 Fraction	----	531 mg/kg	118	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3376736)										
EB1408108-001	S9	EP071: >C10 - C16 Fraction	>C10_C16	428 mg/kg	114	----	70	130	----	----
		EP071: >C16 - C34 Fraction	----	395 mg/kg	130	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB1408108**	Page	: 1 of 5
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NATASHA RYAN	Contact	: Customer Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: nryan@smectesting.com.au	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: P19623-COC	Date Samples Received	: 03-APR-2014
Sampler	: ----	Issue Date	: 08-APR-2014
Order number	: 10937		
		No. of samples received	: 1
Quote number	: EN/025/13	No. of samples analysed	: 1

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

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103)							
S9	**31-MAR-2014**	**----**	----	----	**04-APR-2014**	14-APR-2014	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
S9	**31-MAR-2014**	**04-APR-2014**	27-SEP-2014	✓	**07-APR-2014**	27-SEP-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
S9	**31-MAR-2014**	**04-APR-2014**	28-APR-2014	✓	**08-APR-2014**	28-APR-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
S9	**31-MAR-2014**	**04-APR-2014**	14-APR-2014	✓	**07-APR-2014**	14-MAY-2014	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S9	**31-MAR-2014**	**04-APR-2014**	14-APR-2014	✓	**04-APR-2014**	14-APR-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
S9	**31-MAR-2014**	**04-APR-2014**	14-APR-2014	✓	**04-APR-2014**	14-APR-2014	✓

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: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	0	12	**0.0**	**10.0**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	2	**50.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	2	**50.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	2	**50.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	6	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	2	**50.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	6	**16.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and 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 (2013) 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 (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH - Semivolatile 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 (2013) Schedule B(3) (Method 506.1)
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 (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
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, Na2SO4 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-QWI/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

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1408108-001	S9	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	0	12	0.0	10.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

CERTIFICATE OF ANALYSIS

Work Order	: **ES1407168**	Page	: 1 of 21
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: NATASHA RYAN	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: nryan@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 10937		
C-O-C number	: P19623 - COC1	Date Samples Received	: 01-APR-2014
Sampler	: ----	Issue Date	: 08-APR-2014
Site	: ----		
		No. of samples received	: 20
Quote number	: EN/025/13	No. of samples analysed	: 20

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
- Descriptive Results
- Surrogate Control Limits

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.

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

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

- **ALS is not NATA accredited for the analysis of Bifenthrin in soils when performed under ALS Method EP068D**
- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**

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
		Sydney Inorganics
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	S1	S2	S3	S4	S5
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
					ES1407168-001	ES1407168-002	ES1407168-003	ES1407168-004	ES1407168-005
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		**21.7**	**25.8**	**15.7**	**13.6**	**16.7**
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	**No**	----	----
Asbestos Type	1332-21-4	-	--		----	----	**-**	----	----
Sample weight (dry)	----	0.01	g		----	----	**20.4**	----	----
APPROVED IDENTIFIER:	----	-	--		----	----	**S.SPOONER**	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		**15**	**12**	<5	**10**	**6**
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		**25**	**22**	**6**	**21**	**22**
Copper	7440-50-8	5	mg/kg		**17**	**13**	**23**	<5	**13**
Lead	7439-92-1	5	mg/kg		**17**	**21**	**7**	**18**	**14**
Nickel	7440-02-0	2	mg/kg		**9**	<2	**24**	<2	**9**
Zinc	7440-66-6	5	mg/kg		**32**	**14**	**22**	**7**	**23**
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	**0.3**	<0.1	<0.1
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	<1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		----	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg		----	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		----	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	<0.05	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	<0.05	----	----

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	S1	S2	S3	S4	S5
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
					ES1407168-001	ES1407168-002	ES1407168-003	ES1407168-004	ES1407168-005
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	<0.05	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	<0.2	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		----	----	<0.05	----	----
^ **Sum of DDD + DDE + DDT**	----	0.05	mg/kg		----	----	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	<0.05	----	----

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	S1	S2	S3	S4	S5
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
					ES1407168-001	ES1407168-002	ES1407168-003	ES1407168-004	ES1407168-005
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	<2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		**0.7**	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		**1.3**	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		**1.2**	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		**0.6**	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		**0.6**	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		**0.8**	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		**0.6**	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		**5.8**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		**0.7**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**1.0**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.4**	**1.2**	**1.2**	**1.2**	**1.2**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	S1	S2	S3	S4	S5
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
					ES1407168-001	ES1407168-002	ES1407168-003	ES1407168-004	ES1407168-005
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	**107**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		----	----	**93.7**	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		----	----	**98.8**	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**110**	**106**	**90.9**	**110**	**115**
2-Chlorophenol-D4	93951-73-6	0.1	%		**100**	**98.1**	**72.4**	**101**	**104**
2.4.6-Tribromophenol	118-79-6	0.1	%		**84.6**	**80.4**	**45.5**	**82.4**	**87.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S1	S2	S3	S4	S5
			Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1407168-001	ES1407168-002	ES1407168-003	ES1407168-004	ES1407168-005
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	97.4	97.8	102	102	105
Anthracene-d10	1719-06-8	0.1	%	102	101	89.5	105	108
4-Terphenyl-d14	1718-51-0	0.1	%	102	102	102	105	108
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	102	100	110	112	95.8
Toluene-D8	2037-26-5	0.1	%	104	98.7	104	110	112
4-Bromofluorobenzene	460-00-4	0.1	%	103	97.2	87.2	104	109

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S7	S8	S10	S11	S12
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit		ES1407168-006	ES1407168-007	ES1407168-008	ES1407168-009	ES1407168-010
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		19.0	14.0	13.1	11.8	20.9
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	----	----
Asbestos Type	1332-21-4	-	--		-	----	----	----	----
Sample weight (dry)	----	0.01	g		20.0	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		24	33	5	9	9
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		40	15	12	10	46
Copper	7440-50-8	5	mg/kg		53	30	<5	18	<5
Lead	7439-92-1	5	mg/kg		80	46	20	19	10
Nickel	7440-02-0	2	mg/kg		21	14	<2	15	3
Zinc	7440-66-6	5	mg/kg		232	184	<5	65	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		1.0	1.1	<0.1	<0.1	<0.1
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	S7	S8	S10	S11	S12
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
					ES1407168-006	ES1407168-007	ES1407168-008	ES1407168-009	ES1407168-010
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	----	0.05	mg/kg		<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	S7	S8	S10	S11	S12
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
					ES1407168-006	ES1407168-007	ES1407168-008	ES1407168-009	ES1407168-010
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	----	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	----	**1.2**	**1.2**	**1.2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S7	S8	S10	S11	S12
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit		ES1407168-006	ES1407168-007	ES1407168-008	ES1407168-009	ES1407168-010
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**110**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**90.4**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**92.0**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**102**	----	**111**	**111**	**107**
2-Chlorophenol-D4	93951-73-6	0.1	%		**93.4**	----	**102**	**100**	**101**
2.4.6-Tribromophenol	118-79-6	0.1	%		**77.8**	----	**85.2**	**87.1**	**83.7**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S7	S8	S10	S11	S12
			Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1407168-006	ES1407168-007	ES1407168-008	ES1407168-009	ES1407168-010
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	97.2	----	101	99.8	97.9
Anthracene-d10	1719-06-8	0.1	%	100	----	106	104	102
4-Terphenyl-d14	1718-51-0	0.1	%	100	----	105	103	102
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	114	108	113	116	117
Toluene-D8	2037-26-5	0.1	%	113	105	108	106	114
4-Bromofluorobenzene	460-00-4	0.1	%	109	97.8	102	111	110

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S13	S14	S15	S16	S17
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit		ES1407168-011	ES1407168-012	ES1407168-013	ES1407168-014	ES1407168-015
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		8.3	10.6	10.6	13.5	27.1
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	----	No
Asbestos Type	1332-21-4	-	--		-	----	----	----	-
Sample weight (dry)	----	0.01	g		28.3	----	----	----	17.9
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	----	----	S.SPOONER
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		16	10	<5	8	12
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		15	27	6	15	11
Copper	7440-50-8	5	mg/kg		10	<5	5	<5	9
Lead	7439-92-1	5	mg/kg		30	13	15	15	24
Nickel	7440-02-0	2	mg/kg		2	<2	2	2	2
Zinc	7440-66-6	5	mg/kg		27	<5	20	16	20
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.1	<0.1	0.2
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	----	----	1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID: S13	S14	S15	S16	S17
				Client sampling date / time: 31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
				ES1407168-011	ES1407168-012	ES1407168-013	ES1407168-014	ES1407168-015
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	<0.05
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	<0.2
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	<0.05
^ **Sum of DDD + DDE + DDT**	----	0.05	mg/kg	<0.05	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	S13	S14	S15	S16	S17
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
					ES1407168-011	ES1407168-012	ES1407168-013	ES1407168-014	ES1407168-015
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	<1
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S13	S14	S15	S16	S17
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit		ES1407168-011	ES1407168-012	ES1407168-013	ES1407168-014	ES1407168-015
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**102**	----	----	----	**105**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**81.1**	----	----	----	**77.4**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**84.4**	----	----	----	**83.2**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**116**	**117**	**114**	**101**	**115**
2-Chlorophenol-D4	93951-73-6	0.1	%		**114**	**117**	**114**	**104**	**113**
2.4.6-Tribromophenol	118-79-6	0.1	%		**101**	**91.2**	**113**	**110**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S13	S14	S15	S16	S17
			Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1407168-011	ES1407168-012	ES1407168-013	ES1407168-014	ES1407168-015
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	93.6	108	103	103	99.1
Anthracene-d10	1719-06-8	0.1	%	105	110	106	103	101
4-Terphenyl-d14	1718-51-0	0.1	%	89.4	93.9	80.2	91.6	93.1
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	119	114	118	120	112
Toluene-D8	2037-26-5	0.1	%	115	115	115	112	93.4
4-Bromofluorobenzene	460-00-4	0.1	%	109	106	105	109	96.3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S18	S19	S22	S23	S24
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit		ES1407168-016	ES1407168-017	ES1407168-018	ES1407168-019	ES1407168-020
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		17.0	12.2	7.4	19.4	16.2
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	No	----
Asbestos Type	1332-21-4	-	--		----	----	----	-	----
Sample weight (dry)	----	0.01	g		----	----	----	22.2	----
APPROVED IDENTIFIER:	----	-	--		----	----	----	S.SPOONER	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	24	8	11	9
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		16	14	21	16	25
Copper	7440-50-8	5	mg/kg		<5	10	<5	21	<5
Lead	7439-92-1	5	mg/kg		9	45	12	61	11
Nickel	7440-02-0	2	mg/kg		2	<2	<2	12	<2
Zinc	7440-66-6	5	mg/kg		<5	23	8	80	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	0.5	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S18	S19	S22	S23	S24
				Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit		ES1407168-016	ES1407168-017	ES1407168-018	ES1407168-019	ES1407168-020
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**112**	**114**	**111**	**110**	**115**
2-Chlorophenol-D4	93951-73-6	0.1	%		**108**	**108**	**110**	**104**	**109**
2.4.6-Tribromophenol	118-79-6	0.1	%		**107**	**99.3**	**100**	**99.5**	**114**
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S18	S19	S22	S23	S24
			Client sampling date / time	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00	31-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1407168-016	ES1407168-017	ES1407168-018	ES1407168-019	ES1407168-020
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	0.1	%	106	95.7	117	118	102
Anthracene-d10	1719-06-8	0.1	%	109	104	106	96.7	106
4-Terphenyl-d14	1718-51-0	0.1	%	93.7	89.4	90.8	90.5	97.2
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	103	115	134	99.2	91.2
Toluene-D8	2037-26-5	0.1	%	92.4	96.3	123	102	95.3
4-Bromofluorobenzene	460-00-4	0.1	%	93.2	96.2	115	98.6	97.2

Analytical Results

Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	S3 - 31-MAR-2014 15:00	Dark grey soil with dark grey and orange rocks plus some slag grains with a trace of vegetation.
EA200: Description	S7 - 31-MAR-2014 15:00	Mid brown sandy - clay soil with grey rocks and slag grains plus a trace of vegetation.
EA200: Description	S13 - 31-MAR-2014 15:00	Mid brown clay soil with grey and orange rocks plus a trace of vegetation.
EA200: Description	S17 - 31-MAR-2014 15:00	Mid brown clay soil with grey rocks plus some vegetation.
EA200: Description	S23 - 31-MAR-2014 15:00	Mid brown clay soil with grey rocks plus some vegetation.

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
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	: **ES1407168**	Page	: 1 of 18
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: NATASHA RYAN	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: nryan@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: P19623 - COC1	Date Samples Received	: 01-APR-2014
Sampler	: ----	Issue Date	: 08-APR-2014
Order number	: 10937		
		No. of samples received	: 20
Quote number	: EN/025/13	No. of samples analysed	: 20

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

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

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
		Sydney Inorganics
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos

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**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 3375948)									
ES1407168-003	S3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.7	13.5	14.9	0% - 50%
ES1407168-015	S17	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	27.1	26.7	1.6	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3377706)									
ES1406990-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	11	24.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	24	36	38.4	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	8	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	42	60	35.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	21	28	26.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	101	118	15.5	0% - 20%
ES1406990-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	5	23.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	7	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	10	6	41.7	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 3377708)									
ES1407168-008	S10	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	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	6	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	20	20	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
ES1407168-018	S22	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	21	30	38.5	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	11	33.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	20	53.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	8	9	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3377707)									
ES1406990-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1407168-008	S10	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

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 (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3377709)									
ES1407168-018	S22	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 3373063)									
ES1407129-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<20	181	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3372592)									
ES1407112-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1407169-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3372591)									
ES1407112-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1407169-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit

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 (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3372591) - continued									
ES1407169-001	Anonymous	EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3372591)									
ES1407112-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1407169-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit

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 (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3372591) - continued									
ES1407169-001	Anonymous	EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3372666)									
ES1407168-001	S1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1407168-012	S14	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3372666)									
ES1407168-001	S1	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	0.7	0.8	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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 (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3372666) - continued									
ES1407168-001	S1	EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.3	1.2	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.2	1.1	9.4	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.6	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.8	0.6	38.4	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	0.6	<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
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	5.8	4.2	32.0	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.7	<0.5	39.5	No Limit
ES1407168-012	S14	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	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	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
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3371933)									
ES1407168-001	S1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1407168-009	S11	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3372665)									
ES1407168-001	S1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1407168-012	S14	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

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 (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3372665) - continued									
ES1407168-012	S14	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3372681)									
ES1407111-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1407219-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3371933)									
ES1407168-001	S1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1407168-009	S11	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3372665)									
ES1407168-001	S1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1407168-012	S14	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3372681)									
ES1407111-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1407219-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3371933)									
ES1407168-001	S1	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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
ES1407168-009	S11	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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: BTEXN (QC Lot: 3372681)									
ES1407111-002	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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 (%)*
EP080: BTEXN (QC Lot: 3372681) - continued									
ES1407111-002	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
ES1407219-002	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3377706)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	92	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	103	87	121
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	101	80	136
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	114	93	127
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	105	86	124
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	112	93	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	108	81	133
EG005T: Total Metals by ICP-AES (QCLot: 3377708)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	108	92	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.3	87	121
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	98.8	80	136
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	112	93	127
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	97.3	86	124
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	109	93	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	107	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377707)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.3	70	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377709)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	80.6	70	105
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3373063)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	97.0	83	123
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3372592)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	106	57.4	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 3372591)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	71	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.8	66	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	82.4	69	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.3	71	115
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.3	65	113
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.2	68	116
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	68	118
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	82.4	68	116
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	85.8	68	120
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.5	69	119

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3372591) - continued								
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	67	121
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	66	118
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.3	69	117
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	76.6	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	76	120
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	76	120
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	111	60	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	108	67	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	111	65	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	110	65	129
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3372591)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	56	126
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	110	64	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	89.8	54	122
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.6	64	124
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	75.6	73	117
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	55	119
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	81.2	69	123
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	70	120
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.6	71	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	68	114
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	88.5	68	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	69	115
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	70	118
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	68	116
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	64	120
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	82.8	68	116
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	70	118
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	110	67	123
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	82.1	42	126
EP075(SIM)A: Phenolic Compounds (QCLot: 3372666)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	110	74	116
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	105	74	116
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	107	72	116
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	111	69	123
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	83.7	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	102	69	117
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	100	68	112

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3372666) - continued								
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	101	73	117
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	96.7	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	88.3	57	111
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	88.5	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	28.3	10	57
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3372666)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	112	80	124
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	107	77	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	109	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	108	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	115	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	113	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	114	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	114	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	106	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	110	81	123
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	111	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	90.4	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	102	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	96.6	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	95.9	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	95.6	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3371933)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	111	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3372665)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	101	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	103	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	98.7	64	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3372681)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	113	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3371933)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	103	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3372665)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	102	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	103	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	85.7	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3372681)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3372681) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	113	68.4	128
EP080: BTEXN (QCLot: 3371933)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	107	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	117	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	104	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	104	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	119	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.5	62	138
EP080: BTEXN (QCLot: 3372681)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	107	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	106	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	105	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	104	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	106	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.6	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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 3377706)							
ES1406990-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	112	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	106	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	112	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	102	70	130
EG005T: Total Metals by ICP-AES (QCLot: 3377708)							
ES1407168-018	S22	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	111	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	108	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3377708) - continued							
ES1407168-018	S22	EG005T: Lead	7439-92-1	125 mg/kg	107	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	102	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377707)							
ES1406990-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377709)							
ES1407168-018	S22	EG035T: Mercury	7439-97-6	5 mg/kg	88.5	70	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3373063)							
ES1407129-001	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	97.7	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3372592)							
ES1407112-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	126	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3372591)							
ES1407112-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	78.8	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	77.5	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	78.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	94.5	70	130
		EP068: Endrin	72-20-8	2 mg/kg	92.7	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	92.5	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3372591)							
ES1407112-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	82.7	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	83.7	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	92.9	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	88.3	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	86.3	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3372666)							
ES1407168-001	S1	EP075(SIM): Phenol	108-95-2	10 mg/kg	105	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	100	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	87.8	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	99.3	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	63.0	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3372666)							
ES1407168-001	S1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	105	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3371933)							
ES1407168-001	S1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3372665)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3372665) - continued							
ES1407168-001	S1	EP071: C10 - C14 Fraction	----	640 mg/kg	81.2	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	79.0	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.7	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3372681)							
ES1407111-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	93.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3371933)							
ES1407168-001	S1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	109	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3372665)							
ES1407168-001	S1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	98.8	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	73.9	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.6	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3372681)							
ES1407111-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.3	70	130
EP080: BTEXN (QCLot: 3371933)							
ES1407168-001	S1	EP080: Benzene	71-43-2	2.5 mg/kg	95.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	106	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	95.9	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	108	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	83.5	70	130
EP080: BTEXN (QCLot: 3372681)							
ES1407111-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	74.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	77.2	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	76.9	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	77.1	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	80.2	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	74.9	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3371933)										
ES1407168-001	S1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3371933)										
ES1407168-001	S1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	109	----	70	130	----	----
EP080: BTEXN (QCLot: 3371933)										
ES1407168-001	S1	EP080: Benzene	71-43-2	2.5 mg/kg	95.0	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	106	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.1	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	95.9	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	108	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	83.5	----	70	130	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 3372591)										
ES1407112-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	78.8	----	70	130	----	----
		EP068: Heptachlor	76-44-8	0.5 mg/kg	77.5	----	70	130	----	----
		EP068: Aldrin	309-00-2	0.5 mg/kg	78.4	----	70	130	----	----
		EP068: Dieldrin	60-57-1	0.5 mg/kg	94.5	----	70	130	----	----
		EP068: Endrin	72-20-8	2 mg/kg	92.7	----	70	130	----	----
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	92.5	----	70	130	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3372591)										
ES1407112-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	82.7	----	70	130	----	----
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	83.7	----	70	130	----	----
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	92.9	----	70	130	----	----
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	88.3	----	70	130	----	----
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	86.3	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3372592)										
ES1407112-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	126	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3372665)										
ES1407168-001	S1	EP071: C10 - C14 Fraction	----	640 mg/kg	81.2	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	79.0	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.7	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3372665)										
ES1407168-001	S1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	98.8	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	73.9	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.6	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3372666)										
ES1407168-001	S1	EP075(SIM): Phenol	108-95-2	10 mg/kg	105	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	100	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	87.8	----	60	130	----	----

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP075(SIM)A: Phenolic Compounds (QCLot: 3372666) - continued										
ES1407168-001	S1	EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	99.3	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	63.0	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3372666)										
ES1407168-001	S1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	105	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3372681)										
ES1407111-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	93.2	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3372681)										
ES1407111-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.3	----	70	130	----	----
EP080: BTEXN (QCLot: 3372681)										
ES1407111-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	74.6	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	77.2	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	76.9	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	77.1	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	80.2	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	74.9	----	70	130	----	----
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3373063)										
ES1407129-001	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	97.7	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3377706)										
ES1406990-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	112	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	106	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	112	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	102	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377707)										
ES1406990-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3377708)										
ES1407168-018	S22	EG005T: Arsenic	7440-38-2	50 mg/kg	105	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	111	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	108	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	107	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	106	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	102	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377709)										

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377709) - continued										
ES1407168-018	S22	EG035T: Mercury	7439-97-6	5 mg/kg	88.5	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1407168**	Page	: 1 of 8
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: NATASHA RYAN	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: nryan@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: P19623 - COC1	Date Samples Received	: 01-APR-2014
Sampler	: ----	Issue Date	: 08-APR-2014
Order number	: 10937		
		No. of samples received	: 20
Quote number	: EN/025/13	No. of samples analysed	: 20

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

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103)							
S1, S2, S3, S4, S5, S7, S8, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S22, S23, S24	**31-MAR-2014**	**----**	----	----	**04-APR-2014**	14-APR-2014	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag (EA200)							
S3, S7, S13, S17, S23	**31-MAR-2014**	**---**	27-SEP-2014	----	**08-APR-2014**	05-OCT-2014	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
S1, S2, S3, S4, S5, S7, S8, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S22, S23, S24	**31-MAR-2014**	**07-APR-2014**	27-SEP-2014	✓	**07-APR-2014**	27-SEP-2014	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
S1, S2, S3, S4, S5, S7, S8, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S22, S23, S24	**31-MAR-2014**	**07-APR-2014**	28-APR-2014	✓	**08-APR-2014**	28-APR-2014	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
S3, S7, S17	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**03-APR-2014**	17-APR-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
S3, S7, S13, S17	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**05-APR-2014**	13-MAY-2014	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
S3, S7, S13, S17	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**05-APR-2014**	13-MAY-2014	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
S3, S7, S13, S17	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**05-APR-2014**	13-MAY-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Soil Glass Jar - Unpreserved (EP071)							
S1, S2, S3, S4, S5, S7, S8, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S22, S23, S24	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**04-APR-2014**	13-MAY-2014	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S3, S7, S13, S17	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**04-APR-2014**	13-MAY-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S1, S2, S3, S4, S5, S7, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S22, S23, S24	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**04-APR-2014**	13-MAY-2014	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S1, S2, S3, S4, S5, S7, S8, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S22	**31-MAR-2014**	**02-APR-2014**	14-APR-2014	✓	**03-APR-2014**	14-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080)							
S23, S24	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**04-APR-2014**	14-APR-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
S1, S2, S3, S4, S5, S7, S8, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S22	**31-MAR-2014**	**02-APR-2014**	14-APR-2014	✓	**03-APR-2014**	14-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080)							
S23, S24	**31-MAR-2014**	**03-APR-2014**	14-APR-2014	✓	**04-APR-2014**	14-APR-2014	✓

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: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	22	**9.1**	**10.0**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	12	**16.7**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	13	**15.4**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	5	**20.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	30	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	40	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	37	**10.8**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	2	5	**40.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	30	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	37	**5.4**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	30	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	37	**5.4**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	**8.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	5	**20.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	30	**6.7**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	37	**5.4**	**5.0**	✓	NEPM 2013 Schedule B(3) and 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 (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
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 (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	APHA 4500-CN-O. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TPH - Semivolatile 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 (2013) 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 (2013) 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 (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In-house, APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.

Preparation Methods	Method	Matrix	Method Descriptions
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 A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 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-QWI/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

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	ES1407168-018	S22	**1.2-Dichloroethane-D4**	17060-07-0	134 %	72.8-133.2 %	**Recovery greater than upper data quality objective**

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.

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	2	22	9.1	10.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1408789**	Page	: 1 of 5
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: NATASHA RYAN	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: nryan@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 11018		
C-O-C number	: P19623-COC2	Date Samples Received	: 17-APR-2014
Sampler	: ----	Issue Date	: 28-APR-2014
Site	: ----		
		No. of samples received	: 1
Quote number	: EN/025/13	No. of samples analysed	: 1

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 WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

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*
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics

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.

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

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

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW1	----	----	----	----
				Client sampling date / time	[17-APR-2014]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1408789-001	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.001**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0005**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.024**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		**0.003**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.092**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.433**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW1	----	----	----	----
				Client sampling date / time	[17-APR-2014]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1408789-001	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**36.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**67.7**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**60.3**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**59.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**88.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**101**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**96.8**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**92.6**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**87.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: **ES1408789**	Page	: 1 of 8
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: NATASHA RYAN	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: nryan@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: P19623-COC2	Date Samples Received	: 17-APR-2014
Sampler	: ----	Issue Date	: 28-APR-2014
Order number	: 11018		
		No. of samples received	: 1
Quote number	: EN/025/13	No. of samples analysed	: 1

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

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 ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics

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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3402449)									
ES1408693-012	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0035	0.0035	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.010	0.010	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.040	0.036	12.8	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.072	0.062	14.3	No Limit
ES1408752-004	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.008	0.007	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.013	0.012	9.2	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3402446)									
ES1408622-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1408752-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3404245)									
ES1408751-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1408752-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3404245)									
ES1408751-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1408752-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3404245)									
ES1408751-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1408752-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3404245) - continued									
ES1408752-003	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	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 Spike (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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3402449)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.8	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.8	81	113
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.7	79	113
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.6	81	113
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.7	81	115
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.7	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3402446)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	92.6	78	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3399193)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	93.0	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	72.8	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	# 61.8	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	69.4	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	99.3	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	105	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	100	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	101	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	66.7	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	73.9	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	73.6	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	67.6	61.7	117
		1	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3399193) - continued								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	73.3	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	63.0	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	76.9	61.2	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	72.2	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3399195)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	87.9	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	103	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	96.2	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3404245)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	108	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3399195)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	98.8	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	102	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	100	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3404245)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	106	75	127
EP080: BTEXN (QCLot: 3404245)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	112	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	116	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	114	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	112	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	108	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	105	70	124

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: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3402449)							
ES1408693-013	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	124	70	130
		EG020A-F: Cadmium	7440-43-9	0.025 mg/L	113	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	105	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	109	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	109	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	101	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	118	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3402446)							
ES1408622-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	81.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3404245)							
ES1408751-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	105	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3404245)							
ES1408751-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	103	70	130
EP080: BTEXN (QCLot: 3404245)							
ES1408751-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.3	70	130
		EP080: Toluene	108-88-3	25 µg/L	94.2	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	112	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	112	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	116	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG035F: Dissolved Mercury by FIMS (QCLot: 3402446)										
ES1408622-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	81.4	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3402449)										
ES1408693-013	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	124	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.025 mg/L	113	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	1 mg/L	105	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	1 mg/L	109	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	1 mg/L	109	----	70	130	----	----

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG020F: Dissolved Metals by ICP-MS (QCLot: 3402449) - continued										
ES1408693-013	Anonymous	EG020A-F: Nickel	7440-02-0	1 mg/L	101	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	1 mg/L	118	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3404245)										
ES1408751-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	105	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3404245)										
ES1408751-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	103	----	70	130	----	----
EP080: BTEXN (QCLot: 3404245)										
ES1408751-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	92.3	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	94.2	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	112	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	112	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	116	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1408789**	Page	: 1 of 5
Client	: SMEC TESTING SERVICES PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: NATASHA RYAN	Contact	: Client Services
Address	: P O BOX 6989 WETHERILL PARK NSW, AUSTRALIA 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: nryan@smectesting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9756 2166	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 19623 4145C	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: P19623-COC2	Date Samples Received	: 17-APR-2014
Sampler	: ----	Issue Date	: 28-APR-2014
Order number	: 11018		
		No. of samples received	: 1
Quote number	: EN/025/13	No. of samples analysed	: 1

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

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
GW1	**17-APR-2014**	**---**	14-OCT-2014	----	**23-APR-2014**	14-OCT-2014	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
GW1	**17-APR-2014**	**---**	15-MAY-2014	----	**24-APR-2014**	15-MAY-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
GW1	**17-APR-2014**	**19-APR-2014**	24-APR-2014	✓	**24-APR-2014**	02-JUN-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
GW1	**17-APR-2014**	**19-APR-2014**	24-APR-2014	✓	**24-APR-2014**	02-JUN-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
GW1	**17-APR-2014**	**24-APR-2014**	01-MAY-2014	✓	**24-APR-2014**	01-MAY-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
GW1	**17-APR-2014**	**24-APR-2014**	01-MAY-2014	✓	**24-APR-2014**	01-MAY-2014	✓

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: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	19	**10.5**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.3**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and 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
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

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-QWI/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

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	4062770-007	----	**Acenaphthene**	83-32-9	61.8 %	62.2-113%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate 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.**